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CLINICAL WORK

A QUARTERLY JOURNAL
OF
THERAPEUTICS AND PUBLIC HEALTH

Edited by

ANDREW DAVIDSON, F.R.C.P.E.

FELLOW OF THE ROYAL PHYSICAL SOCIETY;
VISITING AND SUPERINTENDING SURGEON TO CIVIL HOSPITAL,
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CLINICAL WORK

JANUARY, 1878.

OBSERVATIONS ON THE DIFFERENT FORMS OF MALARIAL FEVER IN MAURITIUS

BY THE EDITOR

It is our intention to publish quarterly a series of cases, observed by ourselves and others, illustrative of the leading forms of malarial fever occurring in Mauritius. These may afterwards be followed by cases portraying the features of other diseases of malarious origin. Before proceeding, however, to the detail of cases, we have some general observations to make upon these diseases and their classification.

We do not intend to enter into any discussion about the nature of malaria. The poison is known to us only by its effects upon the human body; and it is simply a matter of speculation whether it is an inorganic substance, or whether on the other hand it consists of low vegetable organisms, or phytogerms, possessing the power of multiplication in the human body. Neither of these views can claim acceptance even as a provisional hypothesis, as neither of them serves to explain the phenomena of the disease. The results of a careful microscopical examination of the blood and secretions will be given as we proceed :—in the meantime, we must avow ourselves to be entirely ignorant of the nature of the poison and unbiassed by any theories on the subject. There are some substances which chemical tests however delicate cannot detect but whose action upon the animal economy is so definite and distinctive that their presence can be infallibly inferred from their effects. So it is with malaria; it has hitherto eluded the most careful chemical analysis and microscopical investigation, but its physiological, or rather pathological, effects are so uniform and peculiar that we cannot doubt its existence. The diseases ascribed to malaria are so numerous and assume so many strange disguises, that one might be inclined to ascribe them to a number of entirely distinct causes. For example, let any one unacquainted with pathology see a patient suffering from frontal neuralgia, and another comatose from an attack of pernicious fever, he might naturally conclude that there was nothing in common between these two affections, and be slow to admit that they were produced by the same cause; yet we unhesitatingly assume them to be the effects of a single poison, or at least of poisons so closely allied, and so similar in their effects, that for practical purposes they may be regarded as identical.

The most salient and distinctive feature of malarious diseases is their periodicity. They are paroxysmal and the paroxysms are rhythmical. This is common to them all, however much they may differ in other respects; and it is so peculiar to them that we may safely assume the malarious origin of a disease which occurs in paroxysms at regular intervals. Periodicity seems so essential to their nature, that should a person who has once had malarial fever—say of a tertian or quartan type—suffer a relapse, the paroxysm will have a tendency to recur upon the day on which it was due according to its original type, even after years of immunity. Cases illustrating this point have been published by Gregory, Graves, and others, and are so well known that they require no further notice. It is well to bear in mind, however, that this character in a minor degree is occasionally observed in other affections, especially in irritative diseases of the genito-urinary organs, intestinal canal, and liver. (*)

Closely connected with their periodicity is the tendency which these diseases manifest to recur long after the patient has been removed from the influence of the marsh poison, and after lenghtened periods of perfect health. Thus men who have spent their youth in the tropics and suffered from malarial fever have been known to have a relapse from exposure to cold or some other perturbing cause, after a quarter of a century of immunity. Such

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(*) Frerichs has recorded a well marked instance of pseudo-intermittent fever arising from the irritation caused by a gall-stone, and which ceased with its expulsion. Vorwaltner records a case in which the patient was seized with an access of fever every fourth day, which disappeared after the evacuation of 120 biliary calculi. Graves refer to a case of multiple circumscribed abscesses of the liver in which the symptoms were so characteristic of intermittent fever, that both he and Sir Henry Marsh overlooked the essential disease, and treated the patient for ague. J. P. Frank mentions the case of a woman who had all the symptoms of a pernicious intermittent with vomiting, in whom, on examination *post mortem*, there was found an osteo-steatome of the uterus. Graves in his *Clinical Lectures* relates the case of a phthisical patient in which the hectic fever accompanying that disease assumed the characters of a true tertian. Hunter gives an instance of pseudo-intermittent fever apparently arising from worms. Numerous instances of a similar kind might be mentioned.

extreme instances, of course, are rare but recurrences without any fresh exposure to the malarious influence are rather the rule than the exception. Sir Ranald Martin tells us that he had a relapse after ten years freedom from fever. Exposure to cold is by far the most common cause of these relapses. Dr. Joseph Brown states that he was stationed at Canterbury, in 1814, with the corps of a cavalry regiment, of which he had the medical charge, and which had recently returned from the Peninsula, where many of the soldiers and officers had laboured under ague. " The wind suddenly and coldly set in from the east, and immediately the hospital, in which for months there had been no cases of the disease, was filled with ague patients". Many cases of the same kind are related by Dr. Mackintosh in his work on the Practice of Physic; and indeed any one who has had much experience of of these diseases, or who is at all conversant with medical literature, will know how frequently relapses of intermittent fever are the result of exposure to cold. Injuries, slight or severe, often have the same effect. Patients who have suffered from malarial fever are more liable than others to urethral fever from passing a catheter, and in them the attacks have a greater tendency to recur. Dr. Gregory has recorded the case of a medical student, a native of the West Indies, where he had been subject to fever,who was seized with a paroxysm of ague on striking his shin against the scraper at the class room door.

Another point of interest, and an important one in relation to the etiology and pathology of malarious disease, is the fact, frequently enough observed, of a patient living it may be months or years in a malarious country, escaping the fever and enjoying perfect health, who after having returned for a longer or shorter time to a healthy country is for the *first time* attacked with malarial fever or paroxyms of neuralgia. It is is worthy of remark that such primary attacks happening after the patient has left the malarious district, as well as those relapses to which we have referred as occuring after long periods of respite, may be of a very severe or even fatal character. (*) Europeans living in the low marshy districts of Madagascar often escape the fever until they make a journey, for the benefit of their health, to the high table land of Imerina. In the same way, the residents on the sea coast suffer more from relapses during the healthy but cold

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(*) " It has occured to me to see a good deal of intermittent fever in situations far remote from marshes, but in every instance the individuals have been at some period of their lives in marshy districts ; yet it is certainly very strange that some of them never had a paroxysm during the period of their residence in these places, and not till months and in some instances years had, elapsed."— Mackintosh, Practice of Physic.

season than they do during the rain and heats, when a stranger not acclimatised is most likely to be attacked. The same thing is observed here in Mauritius. An imprudent change to a healthy but cold and damp district has often been followed by severe—sometimes pernicious—attacks of fever; and we have known cases in which families that had resided with impunity in Port Louis were immediately seized with fever on removing to the healthy and cold districts in the interior. We have a patient now under observation, a young man of about 20 years of age, who resided in an unhealthy district during the great epidemic and the succeeding years without experiencing an attack of fever. About a year and a half ago he had to sit up for three successive nights as an hospital attendant, and on the succeeding day he was exposed to cold, got a chill and was immediately seized with an attack of fever. Although the season was not at that time particularly unhealthy, yet the paroxysms continued to recur for a fortnight notwithstanding proper medical care. From that time he remained free from fever until about a month ago, when he suffered a relapse.

Such facts as these have been adduced to prove that the marsh poison can remain latent in the system for indefinitely long periods, and then manifest itself in its characteristic way. They seem rather to prove the latency of the *effects* of the poison than that of the poison itself. Those who accept the doctrine of phytogerms and ascribe the entire phenomena of the disease to their presence in the system, must assume that these hypothetical germs may remain for years quiescent in the body, and then, on exposure to cold, or on the receipt of a slight injury such as a blow on the shin, suddenly multiply or at least become active and induce a fit of fever.

Casorati and others have been led by a consideration of facts such as those above mentioned to conclude that marsh miasm is not the only or even the chief cause of remittent and intermittent fevers. Those writers regard them as being in many instances of rheumatic origin, as they are so frequently excited by changes of temperature. The fact that those who have not been subjected at any period of their lives to malarious influences never suffer from these diseases through atmospheric changes is a conclusive refutation of such a theory. We cannot indeed subscribe to the doctrine that the presence in the body of the miasma—be it a *miasma vivum* or not—is essential to the development of these fevers. We agree with Casorati that this is untenable; but on the other hand we cannot doubt that the system must be under the influence of the marsh poison—in other words, be suffering from the effects of it, before any simple exciting cause can determine an attack of paroxysmal fever. Apart, however, from all theories, these facts prove, (a) That the marsh miasm may stamp its peculiar impress upon the system without manifesting itself in actual disease, so that a person may be under the toxic influence of miasm without knowing it. (b) That this impress is not an evanescent one, but lasts for a long time, perhaps more or less through life. (c) That those who are under the toxic influence of marsh miasm are liable to attacks of malarial disease from the operation of the various exciting causes already mentioned, although they may never have had an attack of fever and have removed to a healthy locality.

If these conclusions are sound, their practical importance will be readily admitted. The hygiene and regimen of those exposed to endemic influences become of primary importance. Removal from the malarious district and judicious medication, necessary as they are, do not insure immunity from fever. Removal from a malarious district to one that is healthy but cold and damp, so far from being of advantage, may even prove hurtful to a patient, and has not unfrequently determined a pernicious attack, through lack of caution against the exciting causes of the disease. (*)

It is natural to suppose that the enfeebling influence of malaria upon the nervous system, and especially upon the vasomotor nerves, would predispose to many other maladies, and such is undoubtedly the fact. Unfortunately this subject has not received the careful investigation which its importance deserves. Intermittent fevers were at one time thought to be salutary in some diseases. This notion, handed down from remote antiquity and sanctioned by the highest authorities, was up to a comparatively recent period, entertained alike by the profession and the laity. (†) The old English proverb says that ‘ an ague in spring is physic for a king’. We remember the case of a young man who was supposed to be threatened with pulmonary consumption, having been sent away by his family to one of the fen districts in England in the hope that he might catch an ague to cure him

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(*) Sullivan in writing on pernicious fevers states that they especially attack those who after a long residence in a marshy district, remove into another free from malaria.—*Med. Times & Gazette*, March 11, 1876.

(†) Hippocrates says in one of his aphorisms : “ Fever supervening in a case of confirmed spasm or of tetanus removes the affection”.

Sydenham, our English Hippocrates, gives his opinion as follows : “ I observe that spring intermittents are neither long nor dangerous and that they are always beneficial.”

Boerhaave entertained the same views regarding the salutary influence of intermittent fevers in certain diseases.

of consumption. An attack of intermittent fever was long looked upon as an excellent specific for epilespsy and some other forms of nervous disease. Medical men in the present day have abandoned such fancies. They see in malaria a potent source of numerous ills, and look upon it as predisposing to and intensifying many diseases. The natives of malarious countries, especially in the tropics, present in a marked degree the leuco-phlegmatic temperament, with all the tendencies it entails. Evans in his Clinical Treatise on the endemic fevers of the West Indies has remarked how generally this temperament is induced by chronic malarial poisoning. Nowhere, however, is this effect of malaria more observable than in Mauritius, as has been shewn by our able confrère Dr. Vinson in a recent contribution to the " Archives de Médecine Navale".(*) Diseases of the lymphatic system, chronic and acute, simple and infectious, are consequently exceedingly common. It can hardly be doubted that in Mauritius malaria is a powerful predisposing cause of phthisis. This disease seems to to be most prevalent and fatal in the malarious districts; and we think we are right in stating that it has become more common since the outbreak of malarial fever eleven years ago.

Inflammations of the lungs and pleuræ, if not more common in malarious than in other localities, are more dangerous during the acute stage, and more prone to become chronic, and to end in *phthisis*.(†) Pneumonia in persons suffering from malarial cachexia sometimes runs a wonderfully rapid course to purulent infiltration with prune-juice expectoration : the disease proving fatal in this way in 4 or 5 days. In other instances, in which the pneumonia is of a mild type, it not unfrequently assumes more or less of a remittent character,—the dyspnœa, pain and cough subsiding, and the temperature falling so considerably that were it not for the thermometer the patient might be supposed to be apyretic. This period of remission is followed by an exacerbation of all the symptoms, and a corresponding rise in the temperature. Most of the cases of intermittent pneumonia of the older writers must be relegated to the class of masked intermittents ; and so might the class of cases now alluded to, were it not that the physical signs of local disease compel us to regard them as instances of pneumonia complicated with malaria.

Pleurisy, following a peculiar course, sometimes appears in

(*) *Archives de Médecine Navale*, July 1877.

(†) Frank in a foot note upon this subject quotes the opinion of Hippocrates as bearing out the greater frequency of pneumonia in marshy districts; and adds that he has never seen such frequent and terrible examples of that disease as he witnessed at Pavia among the peasants that work in rice fields.

those who are suffering from malaria or its effects. The patient is taken with pleurisy exhibiting the usual symptoms—subjective and physical. The temperature falls on the second or third day, the patient feels better and seems to be promising well, when a new rigor occurs, and the symptoms become aggravated. On examination we find that the other pleura has become involved. After a short time amendment again takes place, to be followed by another exacerbation, often accompanied by pericarditis or perihepatitis. In these cases the lung is only slightly affected; the urine is albuminous; and as a rule they run a rapid course to a fatal termination. We thus see that under the influence of malarial poisoning inflammatory diseases not unfrequently assume a paroxysmal character or become otherwise modified.

An intermittent form of typhoid has lately been very prevalent in Naples. Considerable diversity of opinion prevails as to its true character. Martini and Schrönn hold that it is a mixed infection, having a typhoid and malarial element in it. This view is not accepted by Borrelli and others who regard it as a modified and mild form of typhoid. It has been further noticed that in no inconsiderable number of cases the other essential fevers, such as measles, scarlet fever and small pox have ended in an intermittent stage. Bearing in mind the existence of marshes in the neighbourhood and the certain presence both of malaria and typhoid fevers in the city itself, we think it highly probable that the Naples fever is typhoid occurring in subjects who are under the influence of marsh miasm. A case recently occurred here, very similar to those described as intermittent typhoid.

The following is an abstract of Borrelli's account of this fever:

"The most important symptom is the thermic disturbance which in the majority of cases, represents almost the whole of the disease There are three varieties of it:— (a) a fever continuous at the commencement, and intermittent in its final stages; (b) an intermittent stage at the beginning, followed by continuous fever; (c) an intermittent stage at the beginning and end, and a continuous fever in the middle period: (a) and (c) are the most frequent and (b) is the rarest of these varieties. *** The disturbances of the heart and vascular system are but very slightly marked, and it is very rare to meet with any of those severe troubles which are so common in complete typhoid. The pulse generally ranges between 90 and 100 beats per minute. Dicrotism is not a constant symptom.

The gastro-intestinal derangements are far from reaching that degree of intensity which they assume in complete typhoid; in most cases they are confined to slight redness of the tongue, on which there is a thin white fur, loss of appetite, moderate swelling of the abdomen, and a little gurgling in the ileo-cacal fossa. But what is more important to remember is that there is generally no diarrhœa, but constipation instead which necessitates the use of injections.

There is also among the secondary local symptoms bronchial catarrh and enlargement of the spleen.

The nervous troubles are slight, but the patient's strength is often more exhausted than we should at first be led to expect from the duration and mildness of the disease." This fever was found to yield to quinine. He makes the following remarkable statement : " When the fever assumes a continuous or remittent type, if we give a large dose of quinine an hour or two before the new rise of temperature is expected, the subsequent elevation will be less than on the previous day, and the temperature will remain for a shorter time at its maximum height. On the other hand, in typhoid of an intermittent type quinine has no tendency to lower the temperature". (*)

A fever of such a kind might readily enough be mistaken for a genuine intermittent of an irregular type, unless the physician is already acquainted with this form, and is on the out-look for it. Borrelli quotes the following statement of Trousseau :—" It is especially in the countries where paludal fevers are endemic, and amongst those persons who have only left their country a short time previously, that we see typhoid fever assume an intermittent type at its commencement". Borrelli, although he does no admit that the epidemic he is describing, is a mixed infection of typhoid and malaria, states that he has seen a case of this kind commencing as true ague ; but when the first danger was removed by quinine the fever assumed the character of typhoid.

We come now to the classification of malarial fevers. They are usually divided into intermittent, remittent, pseudo-continued and masked or simulating fevers. The pseudo-continued, however, is nothing but a remittent with indistinct remissions. In all cases of uncomplicated malarial fever, that do not prove fatal in the first access, remissions more or less marked are to be observed at some period of their course. A fever may exhibit distinct remissions at its commencement, which become less marked at a later period, if the fever is aggravated by neglect, improper treatment, or any other cause. On the other hand, the remissions usually become more distinct as recovery advances before a cure is finally effected. There can be no advantage, then, in recognising a pseudo-continued form of malarial fever.

There is abundant evidence to prove that, etiologically considered, intermittent, remittent and masked fevers are essentially the same—the remittent often passing into the intermittent, and *vice versa*, and the masked form into either ; nevertheless, clinically

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(*) *Med. Times & Gazette*, July 8, 1876.

and from a prognostic point of view, these distinctions are useful. The same may be said of the generally recognized types of intermittent fever, viz : the quotidian, tertian and quartan, as well as of the secondary forms, such as the double, doubled, and triple tertian, and the corresponding varieties of quartan. These are distinct types, each having a clinical history of its own, differing in their prognostic import, and, as many suppose, in their pathological tendencies. The semi-tertian of Celsus, for example, with its prolonged pyrexial period, and the double or triple tertian with imperfect apyrexia, which were also called semi-tertian by many ancient authors, are the most dangerous of all, as they are apt to assume the pernicious form. This was the opinion of the Fathers of medicine, and modern experience confirms it. The quartan form, again, although seldom fatal, except in the case of the very young or old, is often associated with chronic enlargements of the liver and spleen, with cachexia and dropsy. In the present day these primary and secondary types are not so easily distinguished, inasmuch as the normal course of the disease is usually checked or changed by treatment, and this is of less importance, as the treatment is essentially the same for all.

All these forms of fever may assume the pernicious character. When their course is marked by no unusual severity, and when no dangerous symptoms supervene, the fever is said to be *benign.* It may be mentioned, by way of explanation, that a fever is not pernicious *merely* because it is *severe* unless its severity occasions some unwonted or dangerous symptoms indicating extreme depression of the vital powers, or leads to organic change. A fever may be fatal without being pernicious—a comparatively mild attack may become formidable, from the debility of the patient or the presence of some complicating malady. Nor does the occurrence of some ominous symptom during the progress of a fever necessarily imply that the attack is a pernicious one. How frequently we see convulsions supervening on mild attacks in children and hysterical females, indicating the extreme excitability of the nervous system of the patient, not the severity or virulence of the disease.

The symptoms most frequently significant of a pernicious attack are apoplexy ; coma ; delirium ; recurring convulsions ; syncope ; urgent vomiting, especially if the vomited matters are black or blue in colour ; purging, if the stools are of a rice-water character or mixed with blood ; hæmaturia or melanuria ; jaundice ; extreme asthenia, and algidity. Any of these symptoms supervening on a malarial fever, and finding no explanation in any peculiarity of the patient's condition, stamps it as pernicious.

Pernicious fevers are usually classified according to the symptoms they manifest. Thus, we hear of an apoplectic, a comatose, an algid, a choleric, an ictero-hæmorrhagic form, and so forth. The forms of pernicious fever are as numerous in fact as the symptoms they exhibit. This symptomatic classification being the one generally adopted requires some consideration.

The *apoplectic* form is undoubtedly rare, although it has been comparatively common in some epidemics, as we find from the writings of Lancisi and Baglivi. It has been confounded with true apoplexy, its malarial cause being overlooked, and has thus been described as epidemic apoplexy. True apoplexy, i.e., cerebral hæmorrhage, may be determined by the congestion caused by an attack of malarial fever, where there is pre-existing arterial degeneration. The patient may die of the apoplexy, or recover with hemiplegia. Such cases are difficult of diagnosis, and are no doubt often overlooked, the patient being supposed to die of a pernicious fever.

In the most pronounced examples of this form the attack is sudden and unexpected. The patient falls down unconscious, deprived of sensation and motion ; the breathing is stertorous ; the pulse fast (occasionally slow) ; the skin hot and moist, and in the more dangerous cases there is often spasm of some class of muscles, particularly those of the lower jaw or fore arm, pointing to local irritative brain lesion. If the patient is or has at a former period been resident in a malarious locality, or has previously suffered from the less occult forms of malarial poisoning, as is usually the case, these facts taken into consideration along with the state of the pulse and skin, will prevent the physician mistaking the nature of the disease. The attack may prove fatal at the first onset, or pass off after a few hours to recur next day, or the day but one after, according to the type of the fever inducing it. It is highly characteristic of malarial apoplexy that it passes off without any paralysis. Hemiplegia is known as a form of masked ague. Elliotson has published an interesting and carefully observed case of this sort; (*) but we know of no recorded instance of apoplectic fever followed by temporary and recurring hemiplegia. It is also to be borne in mind that the true apoplectic form to which we refer is seldom preceded by delirium or convulsions.

In the *comatose*, *soporose*, or *lethargic* form, the stupor generally appears during the period of reaction. It may or may not be preceded by delirium or convulsions. Headache is a common

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(*) *Med. Chir. Rev.* Ap. 1, 1831.

premonitory symptom. Like the apoplectic form it is frequently enough accompanied by localized muscular spasms tonic or clonic. Thus there may be rigidity, or alternate flexion and extension of one or both arms, or trismus. It varies in degree from simple drowsiness or stupidity to the most profound carus. The pulse is often full, but sometimes small, and it is generally accelerated although in some cases it is stated to have been slow.

A case of the pure soporose form is related by Graves in his clinical lecture on intermittent fever. He says "I was sent for in a great hurry to visit a gentleman residing in the neighbourhood of Donnybrook ; he had slept well until four o'clock in the morning, when he was awakened by a general feeling of *malaise*, shortly after which he complained of chilliness, some nausea and headache. After these symptoms had continued for about an hour, his skin became extremely hot, the pain in the head intense, and drowsiness was complained of, which soon ended in perfect coma, with deep snoring and insensibility ; in fact, he appeared to be labouring under a violent apoplectic fit. He seemed to derive much advantage from bleeding and other remedies, and to my surprise was perfectly well when I visited him in the evening. The day but one after, at the same hour, the very same symptoms returned and were removed by the same remedies. I must confess that I could not explain, in a satisfactory manner, the perfect freedom from all cerebral and paralytic symptoms after two such violent attacks of apoplexy ; but when a third attack came on, I then saw that it was a case of tertiana soporosa of nosologists, and I prevented the return of the fits by the immediate exhibition of large doses of the sulphate of quinia".

Maillot and others describe a *delirious* form of pernicious fever. Coma, as we have indicated, may be preceded by delirium. Delirium and convulsions often occur together, or alternate in different paroxysms. A minor degree of delirium is not uncommon in severe attacks of fever, especially in the case of those who have been addicted to drink, or who have suffered from anxiety, or been worn out by brain work. Occurring in such circumstances it is not to be regarded as a sign of a pernicious attack.

Convulsions or epileptiform attacks in connection with malarial fever are frequent in women and children. They may usher in a paroxysm or appear at its close : in the latter case the prognosis is bad. If they recur frequently at short intervals, the patient remaining in a semi-conscious condition between the fits, the greatest danger is to be apprehended. Convulsions may be brought on by debauchery or exposure to the sun in patients who have been for a long time subjected to malarious influences. These attacks are probably most common during the healthy season and in patients who have left the unhealthy locality. A case of the convulsive form was admitted into the Civil Hospital during the week of the races; that is, in the healthiest season of the year. The patient who had for a long time been subject to attacks of fever had been exposed to the sun and had probably been drinking hard. A few paroxysms of intermittent fever came on followed by general convulsions. The temperature was high (about 39°—40°.)

The fits lasted for five or ten minutes at a time; and the intervals, during which the patient never regained consciousness, scarcely longer. After remaining in this state for two days the patient died comatose.

The *algid* form may either occur as a prolonged and intense cold stage, or appear after reaction has set in; or again the algidity may come on suddenly in a patient who has formerly suffered from fever, without any of the usual symptoms of fever manifesting themselves. The temperature of the surface of the body, especially of the extremities, sinks. The internal temperature, however, as measured by the thermometer in the rectum rises, as is indeed the case in the algid stage of cholera. The lips become pale, the eyes sunken, the pulse small and fast, often scarcely perceptible; the action of the heart is heaving and irregular, the breathing hurried and laboured. If there happens to be superadded to these symptoms vomiting and purging we have a condition scarcely distinguishable from Asiatic cholera. The algid state may last from a few hours to two days; in favourable cases reaction appears, the pulse gains in strength; colour and heat return to the corpse-like body, and the patient recovers. In fatal cases the weakness increases, the action of the heart becomes more laboured, the pulse more and more thready, and the patient dies from syncope.

The *ictero-hæmorrhagic* form is distinguished, as its name implies, by a jaundiced colour of the skin and hæmorrhage from some of the mucous surfaces. These symptoms do not arise from any one pathological cause, nor do they indicate any definite complication. It is in vain, then, to attempt to give the symptomatology of this form; the urine in some cases in which jaundice is a prominent symptom seems to contain blood, and coagulates by heat, yet on microscopical examination, the colour is found to be due not to blood but to pigment or to hæmato-globuline. This has no doubt often led to mistakes. Jaundice and hæmorrhage are not always associated. Either of them may occur separately, so that we might speak of an icteric and a hæmorrhagic form. In some instances, in which gastro-intestinal hæmorrhage is the most prominent symptom, the skin is of a dark grey colour, which may be slightly tinged with yellow. We noticed this condition a short time ago in the case of an old man living in one of the most unhealthy districts in the island, who was, so to speak, saturated with malaria. This man had copious hæmorrhage from the stomach and bowels. When we saw him his skin had the peculiar colour we have mentioned; he was weak, drowsy, occasionally a little incoherent; the fever moderate. Some days he was free from fever and quite collected, but when the fever recurred he became drowsy and his mind wandered. He lingered on in this condition for several weeks. A rather curious circumstance regarding this case, is that the patient's wife who attended him during his illness, and seemed in good enough health, succumbed a few weeks later to an attack marked by similar symptoms. In these two cases no post mortem examination was made, and they were not under observation throughout the disease, but we have little hesitation in concluding that these were cases of malanæmia of which we shall have more to say as we proceed.

The *syncopal* form has been noticed by almost every author who has treated of pernicious intermittents, yet very few carefully observed, fully detailed and clinically complete cases are recorded. The syncopal symptoms vary in intensity, in one case there may be eclysis, or simple fainting ; in another leipothymia, or swooning, and in a third we may have the higher form of perfect syncope, the image and often the forerunner of death. Fainting, or a tendency to faint on turning in bed or on rising, is not uncommon in severe attacks of fever, when the temperature is high and continues so for a long time. A seaman was attacked with fever for the first time towards the end of October 1877, after a few months residence in the colony. The fever continued high for three days, and he complained of severe headache (frontal) and great prostration. About four o'clock on the afternoon of the third day rigors occurred and the temperature that evening reached 38.5°, when he was admitted to the hospital. This patient on attempting to get out of bed fell down insensible on two occasions. This happened after the rigors.

Next morning his temperature was 39.3°, rising to 40.5° at noon. Again on trying to get up he swooned and had to be lifted into bed insensible. The pulse was weak and fast. There was no albumen in the urine nor pigment in the blood. Under the use of purgatives and large doses of quinine and sulphate of cinchonidine, viz : 30 grains of the former and 60 of the latter in twenty four hours, the temperature fell, the heart's action became stronger, and the syncopal symptoms disappeared. In this case there can be no doubt that the long continued hyperpyrexia was paralysing the heart.

Another form of syncopal pernicious fever occurs in which the attack is not determined by increase of temperature nor caused by change of position. It occurs suddenly in patients who have been for a longer or shorter time under the malarial influence, especially as a sequel of the tertian or double tertian intermittent. It is sometimes as sudden in its onset as the apoplectic form. The patient may be apparently pretty well,—may be engaged in conversation or otherwise employed, when he suddenly turns deadly pale and falls down insensible. The surface is cold, the pulse irregular and almost imperceptible. Sometimes the patient falls at the first blow ; more frequently the syncope passes off to recur at stated periods, and then perhaps after recovery from several such attacks a fatal one may ensue. In other cases after one or more recurrences the attacks cease under the influence of quinine.

It is unnecessary to follow further this symptomatic classification of pernicious fevers. It is obviously a vicious one, inasmuch as the same symptom may arise from very different causes, and also because several important symptoms are often present in a single case. Thus a case may be at once comatose, delirious, convulsive, icteric and so forth. We admit that in our present state of knowledge it is impossible to make a satisfactory pathological classification of pernicious fevers, yet the advantage of referring, or even attempting to refer, symptoms to their pathological cause is so great, that provisionally at least we think the following arrangement will be of service.

Pernicious fevers, then, may be classed according as the dangerous symptoms arise (a) from the presence of pigment in the blood, (b) from excessive congestion of some organ or organs, (c) from great and long continued rise in the temperature of the body, or (d) from inflammatory or other nutritive changes. We have thus 1. The melanæmic. 2. The congestive. 3. The hyperpyrexial. 4. The cacotrophic forms.

I. The melanæmic form includes many cases that have been hitherto classed as convulsive, delirious, soporose, hæmorrhagic, choleric and probably a few of the ictero-hæmorrhagic. We wish it to be clearly understood that these symptoms may also arise from other causes than pigment in the blood. The pigment is produced from the destruction of the red blood corpuscles and the transformation of the colouring matter into pigment. The spleen is the organ in which this transformation chiefly takes place. In some rare instances, perhaps, it is formed in other organs. Frerichs, to whom we owe much of our information on this subject, observed in the case of a patient who died from quartan fever a considerable quantity of pigment in the liver and kidneys while the spleen and brain remained free.

The pigment occurs as small black or brown granules rounded or angular in form and in larger masses of different shapes; also as round or spindle shaped pigmented cells and as pigmented flakes of various sizes. The pigment enters the portal vein; the larger granules becoming impacted in the capillaries of the liver, the smaller passing through are deposited in the brain, kidneys, skin, &c. These deposits obstruct the circulation, and they sometimes seem to produce coagula in the vessels which still further hinder the passage of the blood. It has been conjectured that, in addition to this mechanical disturbance of the circulation, the changes in the blood connected with the destruction of a vast number of corpuscles and the formation of pigment, may chemically affect the composition of the blood and go to produce some of the symptoms observed in these cases.

When the capillaries of the liver are obstructed by pigment, congestion of the abdominal organs, the veins of which belong to the portal system, is the necessary consequence; and this congestion will be more or less intense according to the degree of obstruction. As the result of this congestion various symptoms appear, such as, vomiting, purging, hæmatemesis, melæna, uræmia, hæmorrhagic suffusion of the peritoneum, and ascites. The spleen becomes enlarged in proportion to the degree of hepatic obstruction, unless profuse hæmorrhage relieves the congestion. The size of the liver is often normal, but it may be either slightly hypertrophied or atrophied. Jaundice is often absent, and is only intense in exceptional cases. The skin is frequently darker than normal, but this alteration is only to be detected in Europeans or the lighter coloured races. The hæmorrhages arising from melanæmic intermittent arcoccasionally intermittent, occuring during the paroxysm.

Cerebral symptoms of a severe kind may appear in melanæmia, when no pigment can be detected in the brain. In most instances, however, in which the cerebral symptoms are marked, the capillaries of the cortical substance are found to contain a considerable amount of pigment. In these cases the patient complains of headache and vertigo. The headache is generally severe and persistent. The more dangerous symptoms are convulsions, delirium, coma and local spasms, and in the sequel aphasia and loss of memory. The convulsions due to this cause are usually repeated, with short intervals. They are preceded by headache or vertigo, sometimes by delirium, and are often followed by coma. The true comatose condition is not symptomatic of melanæmia. It is rare that coma precedes the convulsions, and never, so far as we know, does it appear in these cases without being associated either with convulsions or delirium.

The deposit of pigment in the kidneys gives rise to albuminuria, hæmaturia, melanuria, or ischuria.

In all cases of intermittent fever, whether pernicious or otherwise, the blood should be examined microscopically. Many cases of persistent headache and vertigo depend on melanæmia. The melanæmic form of pernicious fever may present itself during the first attack, if the patient has been for a long time exposed to malarial inflences, and it occurs not unfrequently after he has removed from the unhealthy locality. More generally, however, it appears, after the patient has had numerous paroxysms. It may arise in connection with any form of malarial fever. Perhaps it is most common with the irregular forms of tertian or quartan.

II. The second class of cases are those of which the chief pathological condition is congestion. Under this head are included the algid, syncopal, apoplectic, comatose, some cases of convulsive, and many cases of the choleric form. In the abdominal congestions the surface is generally cold, the pulse weak, the internal temperature increased; whereas, in the cerebral congestions, the external temperature is almost always above normal, and often high. We do not say that there are no exceptions to this rule, but it will be found to hold good in the majority of cases. The algid and syncopal forms are closely allied, and seem to partake of the nature of shock. In both these forms the blood accumulates in the abdominal vessels, especially in the veins. Professor Goltz of Strasburg showed how shock acts on the frog. On striking the abdomen of a frog two or three times the heart stops and the blood leaves the surface and accumulates in the abdominal vessels. The injury caused by the blow paralyses the vaso-motor nerves of the abdomen, so that the vessels dilate, scarcely any blood enters the heart, and as a matter of course little can be discharged during the systole. He also found that by regulating the force of the blows on the abdomen of the frog he could produce either stoppage of the heart's action, or dilatation of the abdominal vessels, or both almost at will. The paralysing influence of the malarial poison seems to act in a similar way on the heart and vaso-motor nerves in these forms of fever : in the algid form, the vessels of the abdomen are paralysed, the blood accumulates there, the heart receives almost none during the diastole and consequently propels the smallest possible quantity during the systole. If the patient in the algid state attempts to sit up, syncope may be result, as in such circumstances still less blood finds its way into the head. In the syncopal form the nerves of the heart are suddenly paralysed, the heart's action fails ; in this case there is dilatation also of the abdominal vessels. The grounds upon which we conclude that choleric symptoms may be due to congestion are too obvious to require further remark.

The convulsive, comatose, and apoplectic forms are similarly allied; they depend *directly* upon imperfect supply of blood to the brain, *indirectly* upon cerebral congestion, preventing the circulation of arterial blood in the capillaries of the brain. Experiments prove that general convulsions and loss of consciousness can be induced by cutting off the supply of blood to the brain. The congestion that results from vaso-motor paralysis may induce œdema of the brain with consequent anæmia.

It is uncertain whether, or to what extent, collateral fluxion arising from peripheral obstruction to the circulation increases the congestion of the already paralysed vessels. The apoplectic, comatose and convulsive forms seem in fact all to be due to the brain not being duly supplied with arterial blood. When the vascular disturbance occurs suddenly, the apoplectic form is the result. When it is established more gradually we may have preceding symptoms of irritation, such as headache and vertigo before coma comes on; the convulsive form is probably due to a more complete anæmia of the brain generally, or to some portions of it.

III. The important influence which increase of temperature exercises on the economy is now well established and universally recognised as regards other fevers. Long continued hyperpyrexia leads to important changes in the blood and tissues : it is a powerful agent in inducing asthenia, and especially paralysis of the heart, and in this way, as we have already shown, hyper pyrexia is one of the causes of syncope. Dr. Richardson has investigated experimentally the effects of increment of animal heat on the system. He concludes that " with an increment of from seven to eight degrees, there is an act of contraction of the whole arterial system, and especially of the extreme terminal parts of the arterial vessels : the vessels resist; there is obstruction—congestion some would call it—and as a necessary consequence there is diminished excretion and secretion from the excreting and secreting surfaces. On this follows the accumulation of water in the blood. Upon the accumulation of water follows that tension of the arterial pulse which runs so steadily with suppressed secretion. Upon this often follows rapid accumulation of fluid in serous cavities, or exudation of fluid in the least resistent organs. This state of things is followed by a fall in the temperature with collapse, indicating separation of fibrine in the heart."

An increment of animal heat less than what is here described, but continued for some time, leads to fatty degeneration of parenchymatous organs such as is so frequently seen in those who have died of malarial fevers.

IV. In many cases the increase of temperature, with local congestion, and other conditions imperfectly understood, determine nutritive changes in the various organs, some of an inflammatory kind and others more peculiarly degenerative. Some of the so called ictero-hæmorrhagic and icteric cases, as well as those fevers which are accompanied by hepatic,intestinal, or renal inflammations, belong to this cacotrophic class.

We shall not be able to give the cases illustrating the different forms according to the order in which we have considered them above. This is a matter of little moment, as we are not pursuing this inquiry systematically but clinically, which permits our selecting interesting and instructive cases as they occur. We shall commence then with a case of ictero-melanuric fever.

Malarial Fever, with Icterus and Hæmato-Globuline in the Urine

OBSERVED BY D^r^ PELLEREAU

X.—Aged 24, a native of Pondicherry. Came to Mauritius in 1871. Six months after his arrival he had several paroxysms of intermittent fever, which after a time changed to the remittent type. In 1872 he had an attack of fever accompanied with jaundice, and passed urine which seemed to be mixed with blood. This condition lasted for two days. He had a second similar attack in 1874, which also lasted for two days; and a third in 1875. On these three occasions the supposed bloody urine appeared *after the rigors*. After this the patient continued in good health until the morning of 29th October 1877, when at about 4 o'clock he was seized with a severe pain in right hypochondriac region which prevented him from breathing freely.

Present condition, 29th October. Icteric colour of skin and, conjunctiva; pulse 60 and compressible; temperature 37°. Heart and lungs normal; spleen much hypertrophied reaching down into the iliac fossa, not painful on pressure. Slight tympanitis, tongue covered with a thick greenish fur; bilious vomiting and stools. Was ordered calomel followed by a saline.

October 30th, 8 o'clock a.m. Slight pain and tenderness in right hypochondriac region; jaundice deeper; nausea and bilious vomiting; anorexia; pulse 90; temperature 38°. At 9 p.m. Jaundice not so deep, pulse 90; temperature 38°. Was ordered bromide of quinine, 1 gramme.

October 31st, 8 o'clock a.m. Patient much better in every respect; asks for food; pulse 80; temperature 37°. Was ordered a seidlitz powder which was followed by four bilious stools. 5 o'clock p.m. Half an hour after breakfast patient noticed that his urine was getting more 'bilious'. At 1.30 p.m., had repeated rigors; then at 4.30 passed dark urine. Now, at 5 o'clock the jaundice is deeper; skin hot and covered with perspiration; patient complains of frontal cephalalgia; no pain in loins, or anywhere else, excepting very slight uneasiness in right hypochondriac region. Pulse 100; respirations 26; temperature 40.6°; tongue white; no vomiting, but has had several bilious stools. Slight systolic murmur at base. Urine obtained early in the morning was acid and contained no albumen. Urine passed immediately before the rigors was alkaline, and contained $\frac{1}{5}$ of albumen; that passed three hours after rigors was like port wine; alkaline in reaction; no trace of bile on being tested with nitric acid: it contained $\frac{4}{5}$ of albumen.

Microscopically examined not a single blood cell could be found, but there were a few mucous corpuscles, a large number of granules dark or bright according to focus, a considerable number of vibrios and a few bacteridæ. This refers to the last urine and it was examined shortly after it had been passed.

Blood was aqueous, red corpuscles diminished in number, having little tendency to run into rouleaux, increase of leucocytes. Many of the red cells more or less deformed.

The patient was ordered 2 grammes of the bromide of quinine with sulphuric lemonade and ice.

November 1st, 8 a.m. Jaundice deeper; pulse 84; temperature 37.5. No cephalalgia. Pain in hypochondriac region very slight; no vomiting, bilious stools, deafness. Urine scanty, high coloured, acid, no albumen. Specific gravity normal. Continue treatment.

12. Noon. Patient states that he observed his urine begin to get darker and shortly after, viz: at 10.30 he had rigors which lasted for an hour. Half an hour after the termination of the rigors he passed port wine urine. During the hot stage he had bilious vomiting and stools. When seen at noon, pulse 88, temperature 40.6. Bromide of quinine 0.50 centig., was injected under the skin;

patient was ordered iced champagne. 5 p.m., pulse 100; respirations 26; temperature 39.3.°

November 2nd, 8 a.m. Jaundice much deeper; no itching, great prostration; tongue deep yellow, looking very thin and indented at margins, as is often seen in this form of fever.

Liver and spleen tender, but no enlargement of liver or further increase in the size of spleen. Pulse 96; temperature 37.5°; urine only high coloured. Treatment by bromide of quinine injected subcutaneously and by enema.

2 p.m. States that at 10.30 a.m. he had repeated rigors, and that two hours afterwards he passed blood coloured urine. Pulse 110; temperature 40.°

5 p.m. Pulse 100; temperature 39°. Continue the bromide of quinine injections.

November 3rd. Slight tendency to delirium last night; bilious vomiting and stools; systolic murmur in great vessel. Urine only high coloured; acid; no albumen; sp. gr. 1020. Pulse 100; temperature 38°. One gramme of quinine injected below the skin.

1 p.m. Pulse 100; temparature 38.8°. Fit came on at the same time, but slight; urine high coloured, but nothing more.

9 p.m. Pulse 110; temperature 39°; urine good. One gramme of the bromide to be injected beneath the skin.

November 4th. 8 a.m. Pulse 100; temperature 38.8°; jaundice considerably diminished; tongue slightly yellow; ordered purgative.

2 p.m. Temperature 39.2°; pulse 100.

November 5th. Better. Respirations 16; pulse 100; temperature 38.5°; jaundice almost gone; tongue cleaner and no longer presenting the thin appearance which we noticed; systolic murmur very loud; œdema of tibiæ.

2 p.m. Pulse 100; temperature 39°.

November 6th. Slight delirium last night. Patient states that he feels better, no pain or vomiting or diarrhœa. Appetite improving. Pulse 100; temperature 38.8°.

$\left.\begin{array}{l}\text{2 p.m.}\\\text{5 p.m.}\end{array}\right\}$ Pulse 100; temperature 39.2°;

November 7th, 8 a.m. Pulse 90; temperature 38°. From this time the patient's condition improved daily.

As other cases of the same nature will be given in a subsequent number, the Editor will defer his remarks upon this case, until they have been published.

DYSENTERY

BY THE EDITOR

By referring to the Registrar General's reports it will be seen that, next to malarial fever, dysentery is the most fatal disease of this colony. In the year 1872, the deaths attributed to this cause numbered 895; in 1873 the number rose to 1020; in 1874 it was no less than 1118. In 1875 it fell again to 769; and in 1876 to to 618. For the quarter ending 30th June 1877 no fewer than 336 deaths were registered from this disease. We will better understand and appreciate the significance of these figures if we compare this mortality with what obtains in England. The population of England and Wales in 1863 was 20,554,137; and the number of deaths from dysentery that year was 1,851. In the year 1874, the population of Mauritius was estimated at 337,619, while the number of deaths from dysentery as we have before observed was 1118. The mortality from dysentery in Mauritius, relatively to the population, is thus more than sixty times greater than in England.

This comparison, or rather contrast, is sufficient to prove that the disease is, to a great extent, dependent upon endemic influences; and a wider review of its geographical distribution confirms this conclusion. It may be laid down as a rule, that wherever malarial fevers prevail, there dysentery is also common. When malarial fever breaks out in a locality that was previously healthy, as has happened in Mauritius, then we find dysentery following in its rear, claiming its own share of victims. Yet although malaria is unquestionably the most prominent condition of its endemic prevalence, it is by no means the sole cause of dysentery. Sewage and animal effluvia; overcrowding; defective ventilation; a too meagre diet, or a diet deficient in certain necessary nutritive principles; food, whether animal or vegetable, tainted or putrid; the too exclusive use of salt provisions; and finally impure water, are all well established causes of dysentery.

Dr. Clouston, gave an interesting account in the "*Medical Times and Gazette*" (June 3rd, 10th, 1845), of an epidemic of dysentery which occurred in the Cumberland and Westmorland

Asylum, occasioned by sewage exhalations. In the same way, during the Peninsular war, dysentery broke out in an epidemic and fatal form at Ciudad Rodrigo, where it was calculated that nearly twenty thousand human bodies had been interred shortly before; and it was supposed that the emanations from their decomposition was the cause of its prevalence and fatality. Then as regards the important influence of diet in the causation of this disease, it has been observed in the English army that by substituting fresh for salt provisions, the mortality fell from 51 to 5 per 1000 men. A defective diet is especially injurious in malarious localities. The outbreak of dysentery among the prisoners in the Millbank Penitentiary was the product of a meagre diet and marsh miasm. It is needless to insist upon the fact, too frequently illustrated by outbreaks of dysentery in camps, ships and prisons, that where large numbers of human beings are congregated in badly ventilated dwellings, the co-existence of any of the other causes to which we have referred is sufficient to determine an epidemic of dysentery.

We have thought it necessary to recal these rather trite facts to mind, in order to give weight to the conclusion that although dysentery is often essentially a malarious disease, still its prevalence and virulence is greatly increased by more obvious and remediable causes and that a great decrease in the annual mortality from this disease may be anticipated from the rigorous prosecution of sanitary improvements. Nothing is more to be deplored than the fatalistic resignation with which, in Mauritius, the miserable incubus of disease is borne. Let us be assured that endemic diseases are not a fatal necessity; that on the contrary they are owing to ascertainable and often preventable causes. The excessive mortality from dysentery and a number of other diseases which we could mention, are as much our disgrace as our misfortune. By patient and enlightened investigation, by prudent and vigorous sanitary measures a great improvement on the public health must in time be secured

The following cases illustrate an interesting form of dysentery or rather enteritis; for although the large intestine is chiefly affected the small intestines, throughout their whole extent, are also implicated.

Ramboojhawon, aged 20 years, a native of Calcutta, admitted 11th October 1877.

History.—Just arrived from India, 29 days at sea. States that during the latter half of the voyage he suffered from diarrhœa. Evacuations, watery, greenish and frothy. Attributes his illness to the salt fish he got on board.

Present condition.—Bowels opened 15 or 16 times a day; motions loose, frothy, greenish, offensive, tinged with blood and mucus; no straining, but complains of pain on pressure in the lower part of abdomen; great thirst, skin moist, pulse 120, weak.

Pulveris Ipecac. 15 gr.
Tinct. Opii drachm, 1
Make a bolus to be given every eight hours.
Diet, milk and chicken.

October 12th. Patient very weak. Has had eight loose, dark grey motions tinged with blood; pulse 110; skin moist, great thirst; no appetite; morning temperature 37°, evening 38°.

October 13th. Condition as above; the motions contain shreds (probably of the mucous membrane), are copious and offensive; patient states that he feels worse. Pulse 110; temperature morning 37°, evening 38°. Urine high coloured. Was ordered bismuth 30 grains, quinine 5 grains, and Dover's powder 10 grains, every six hours; with daily injections of linseed infusion with a few drops of creosote.

October 14th. Has had six motions since yesterday, of a dark colour, containing a little blood but no mucus: pulse 110; temperature at night rose to 38.5.°

October 17th. Since last report the patient seems to be improving. Motions less frequent and not mixed with blood or mucus. The temperature on the morning of 15th was 37.5°, rising as usual one degree at night. On the morning of the 16th it stood at 36.8°, and this morning at 36.5. To-day, again, he feels worse. Has had eight dark brown motions; complains of pain in abdomen; frequent vomiting; skin moist and cold; great thirst; urine high colored; pulse 110; tongue pale but red at the edges. Continue treatment.

October, 8th. Condition the same as yesterday.

October, 19th. States that he feels better. Bowels have been moved four times. Motions, contain a large quantity of blood and some shreddy matter; pulse 112; tongue pale but red at edges.

October, 21st. Feels himself worse. Has had ten yellow offensive stools mixed with blood and mucus; great straining and griping.

October, 24th. Has continued in much the same state as when last report was made. Motions changing in colour frequently dark green; yesterday he passed a considerable quantity of blood and mucus. Has had fourteen motions during the last 24 hours.

October 25th. Has had frequent yellowish frothy stools mixed with blood and mucus, and large shreds of mucous membrane, accompanied by griping and straining ; great thirst ; pulse 100 ; skin most : tongue pale ; ulcerous patches all over mouth and tongue. Omit the bismuth and repeat the bolus of ipecacuanha and opium.

October, 27. Yesterday his bowels were opened involuntarily. Today he is evidently sinking. Died at 7.35.

Autopsy eight hours after death :—

Brain and *Lungs* healthy. *Kidneys* congested. *Liver* rather; small. *Spleen* small, capsule not adherent. *Small intestines.*—several spots of congestion on peritoneal coat. A few patches of ulceration on mucous surface; a number of diffused patches of congestion, the vessels forming a very distinct network, most numerous in ilium. Peyers patches elevated and presenting the shaved-beard appearance. *Large intestines.*—Mucous coat greatly thickened and softened, presenting a number of dark brown fluffy villous projections. In many places the mucous coat has been destroyed leaving the muscular layer exposed. Numerous sloughing ulcers about the size of a sixpence over its whole extent ; also a number of congested patches exhibiting the same distinct network of vessels noticed in the small intestine. These patches are many of them larger than a dollar in size, and are somewhat circular in form. They are more numerous than on small intestine.

Mesenteric glands enlarged and some of them pulpy. Mucous membrane of mouth and pharynx covered with small ulcerous patches. *Heart* pale and flabby.

Ramdayne, aged 20 years, newly landed in the colony. States that he has been suffering from diarrhœa (or dysentery) for nearly one month. The motions are frequent, copious, offensive, mixed with mucus and blood, and accompanied by griping and straining. Was admitted on the 11th, and was ordered ipecacuanha gr. 30 and tincture of opium, 1 drachm every eight hours.

October 12th, 1877. There is no blood or mucus to-day in the stools ; motions frequent, watery, and very offensive. Temperature in the evening, 37.3. Omit ipecacuanha. Ordered Bismuth gr. 30 ; Pulv. Doveri gr. 10 ; Quinine, gr. 5. every six hours.

October 17th. Instead of giving the daily state of this patient, we may say that since last report his condition has continued very much the same. No appetite ; great thirst ; stools copious, offensive, and black from bismuth, varying from five to twelve times in the twenty four hours ; temperature about 36.5 in the mornings and rising one degree at night.

October 20th. Since last report the motions have been less frequent, but the patient is getting weaker.

23rd. Has had six motions during the past 24 hours accompanied with griping, they are semi-fluid and yellow. Patient in getting weaker, and more anæmic every day. From this time he gradually sank, and died on the evening of the 25th.

Autopsy.—*Brain* normal. *Right lung* slightly congested. *Left lung* lower lobe there was a small patch of lobular pneumonia, *Liver* rather smaller than natural. *Spleen* small, capsule adherent. Intense congestion of *mesentery*, and enlargement of *mesenteric glands*. Some ulcerations in *small intestines* with enlargement of Peyer's glands; the patches presenting a shaven-beard appearance. *Large intestine.* Mucous membrane very much thickened and softened throughout, and studded with numerous ulcers from the size of a pea to that of a sixpence. In some places it has a peculiar fluffy or villous appearance. In numerous parts the mucous membrane has been destroyed, exposing the muscular coat which seems thickened and inflamed. *Stomach* presents several congested patches in lesser curvative, with net like injection of vessels. Ulcerations in *mouth* and pharynx. *Kidneys* congested. *Heart* pale and flabby.

Matye, aged 28; native of Calcutta. States that he had diarrhœa on the passage from India, that he had recovered, but short ly after it recommenced and that he then passed blood and mucus. Attributes his illness to the bad fish supplied him on board ship. Was admitted the 12th October, 1877. On examining the evacuations they were found to be black in colour, containing a little blood and mucus, and passed with griping and straining. Was ordered ipecacuanha grs. 20 , tincture of opium, one drachm. made into a bolus, to be taken every eight hours.

October 13th. Has been to stool ten times since his admission; motions very offensive and dark.

October 14th. Has had twelve motions during the past 24 hours; scanty, watery and dark.

October 17th. Feels worse to-day; motions copious and offensive, dark brown, mixed with a little blood, and frequent (nine times in 24 hours), accompanied with griping.

October 18th. Has been to stool six times, colour and other characters of the motions as before.

October 19th. Patient is getting weaker, vomits everything he takes; no appetite; motions brownish; has been only four times to stool since yesterday.

October 20th. Still in the same state, but has passed a little blood in his stools.

October 24th. Continues in the same state; appetite better; three or four motions a day, very loose, but without any admixture of blood or mucus.

October 28th. Motions watery, and yellowish or greenish in colour; becomes weaker and more anæmic every day; patient vomits almost every things he eats.

October 30th. The patient's condition is much the same as at last report, motions five or six a day.

November 1st. Patient is gradually becoming weaker; bowels opened more frequently, motions scanty, with a few drops of blood. He continued in this condition, until the evening of the 5th, when he died. The temperature throughout kept about 37° and 37° 5.

The autopsy revealed the same morbid appearances described in the two former cases; viz : congestion of patches of the small intestine, with a number of small ulcers scattered here and there, and swelling of Peyer's patches. Thickening and softening of the mucous membrane of the large intestine, most marked in the region of the sigmoid flexion, with ulcerations extensive and sloughy, and enlargement of the mesenteric glands.

PROPOSED SUBSTITUTES FOR QUININE—TANNIN

BY D^r MONTY

Resident Surgeon, Civil Hospital

The constantly increasing demand for quinine, its growing scarcity and consequently enhanced price, have led physicians to seek for other substances that might be substituted for it in the treatment of malarial fevers. There can be no doubt that the cinchona alkaloids. viz: quinine, quinidine, cinchonidine, and cinchonine occupy, and will continue to maintain, the first place among febrifuge and anti-periodic remedies. Their price, however, puts them beyond the reach of the poorer classes; hence it becomes important to ascertain, with some approach to precision, the value of the reputed febrifuges that have from time to time been proposed as substitutes for quinine. Amongst these we may mention tannin, arsenic, turpentine, carbolic acid, ammonia carbazotate, the hyposulphite of soda, and eucalyptus globulus. Tannin has scarcely received that attention from the medical profession which we think it deserves. It was recommended more than sixty years ago by Pezzoni; by Chansarel in 1840 and quite recently by Dr. Leriche of Lyons, who has maintained that it is as efficacious as quinine in the treatment of malarial fever.

After extensive experience in the use of this substance in various forms of malarial fever, I have been led to form a high estimate of its value. In complicated and pernicious cases, quinine is to be preferred,as being more prompt and certain in its effects; but in every uncomplicated case, in which I have prescribed Tannin a cure has been effected in a comparatively short space of time.

I shall briefly record a few cases (16 in number), with diagrams of temperature, illustrative of its action in the treatment of fever.

CASE I.—A. A native of India, aged 24; was admitted on the 10th April, 1877, labouring under a severe attack of intermittent fever of the tertian type. Pulse during the paroxsyms 110, falling to 65 or 70 in the interval. Discharged on the 26th. Teatment : Tannic acid, 30 grains every four hours.

Case II.—F. I. A native of Bombay, aged 21; admitted on the 26th of March, 1877 for malarial fever; pulse varying from 80 to 100. Discharged on the 13th April. Treatment as above.

Case III.—M. H. A native of Bombay, aged 22; was admitted on the 9th April, 1877, suffering from intermittent fever of the quartan type. Discharged on the 18th of April. Treatment: Tannic acid as above.

Case IV.—S. A native of Calcutta, 56 years of age; admitted on the 22nd September, 1877, suffering from malarial fever, of the pseudo-continued type; discharged on the 28th of the same month. Tannic Acid, 30 grains every four hours.

Case V.—N. R., Aged 24, a native of Bombay; admitted with quotidian fever on the 11th April, 1877; was discharged on the 14th of the same month. Treatment as above.

Case VI.—S. H. A. A native of Bombay; admitted on the 27th March 1877, labouring under malarial fever of the tertian type. Discharged on the 3rd April. Tannic acid treatment.

Case VII.—A. J.—Aged 30, a native of Bombay; admitted with malarial fever of an irregular type on 11th April, 1877; discharged on the 16th of same month. Treatment: Tannic acid as above.

Case VIII.—M. A native of Calcutta, aged 30; admitted on the 27th March, 1877, suffering from malarial fever of the quotidian type ending in the, so-called, pseudo-continued; was discharged on the 3rd April. Treatment: Tannic acid, 60 grains every four fours.

Case IX.—L. Aged 25, a native of Calcutta; admitted with tertian fever on the 16th April, 1877, discharged on the 18th of the same month. Treatment: Tannic acid 60 grains every four hours.

Case X.—S. A native of Calcutta, admitted on the 26th March, 1877. At its commencement it was of the pseudo-continued type, but changed to tertian. Dicharged on the 4th April, 1877. Treatment; Tannic acid.

Case XI.—R. Aged 20, a native of Calcutta, was admitted on the 18th September, 1877, with quartan fever and was discharged on the 30th of the same month. Treatment: Tannic acid.

Case XII.—A. Aged 27, native of Bombay; admitted on the 8th September, 1877; was discharged on the 10th. Fever of the pseudo-continued type. Treatment by Tannic acid.

Case XIII.—A native of England, aged 30. Admitted on the 9th of August, 1877, suffering from intermittent fever, of the tertian type. Treated with Tannic acid; and was discharged on the 13th of the same month.

Case XIV.—B. Aged 24; was admitted on the 20th September, 1877, suffering from quotidian fever; discharged on the 24th of the same month. Tannic acid treatment.

Case XV.—S. D. A native of Bombay, aged 24; admitted on the 22nd, was discharged on the 26th of September, 1877. Treatment: Tannic acid.

CASE XVI.—J. B. A native of Bombay, was admitted on the 11th April, with malarial fever of an irregular type; and was discharged on the 18th of the same month. Treatment: Tannic acid as above.

REMARKS

These abridged notes of sixteeen, out of above a hundred cases of malarial fever treated by tannin, are given solely to illustrate the results to be obtained by this remedy. In two cases out of the entire number, complications supervened necessitating the abandonment of the medicine. All the others recovered under the use of tannic acid alone.

It is evident, from these results that in tannic acid we have a thoroughly trustworthy remedy for the milder cases of malarial fever.

It has been urged against its use that it is nauseous, and also that it frequently causes vomiting. Its taste, however, is probably less disagreeable to most patients than that of quinine; and although it is true that the first doses are occasionally rejected, yet I have found that the stomach soon becomes tolerant of it; and as a matter of fact there are very few patients who object to its taste, and it is only in exceptional instances that it produces troublesome vomiting.

It has further been objected to on the ground that it causes obstinate constipation. This objection is founded purely on *a priori* reasoning, and not on experience. In moderate doses tannic acid is astringent; in the large doses in which it is administered in fever, it never constipates, but on the contrary, frequently induces diarrhœa.

Some have thought that, in large doses, tannic acid tends to give rise to collapse. My experience does not confirm this opinion. In none of the cases treated by myself have I observed any such symptoms. I am convinced that the danger of collapse is simply imaginary.

ELEPHANTIASIS GRÆCORUM.

This disease has lately attracted very considerable attention in Europe. The etiology, pathology and therapeutics of the disease, as well as its varieties and characteristics, have been the subject of investigation by a number of thoroughly scientific men whose researches have cast a new light upon many points connected with this terrible malady. Much still remains to be discovered by future inquirers ; and as it is a disease exceedingly common in this island, we think it our duty to make it a special subject of study. We gladly welcome, therefore, these two carefully observed cases which through the courtesy of our young and energetic *confrère,* Dr. Pellereau, we have had an opportunity of examining for ourselves and the particulars of which we now publish from his notes. We have come to the conclusion, that none of the accounts of this malady hitherto published give us anything like a satisfactory description of the various forms of this disease, especially in its early stages. Here, then, is a case which in its earliest stage came under medical observation ; and connected therewith is the case of another member of the same family (a brother of the patient) suffering from a peculiar form of the malady, the true character of which had not been recognised until the disease in one of its more common forms manifested itself in the sister.

X......, A girl of fair complexion thirteeen and a half years of age. Has not yet menstruated. Her general health is good ; but she has suffered a good deal from malarial fever. There is reason to believe that leprosy is hereditary in the family, although no precise information on this point can be obtained from the parents. The girl's father had suffered from syphilis ; mother healthy ; sisters healthy and the brothers also, with the exception of one whose condition will be described separately. Several members of the family on the mother's side are said to suffer from Elephantiasis Arabum.

Ten days before she came under observation, whilst dressing in the morning, she noticed a red patch on her left foot ; the next day she observed similar patches on her left arm, and on the third day all the patches present when we first examined her had appeared.

Condition of patient when first examined on the 1*st September* 1877.

The patient is of a fair complexion with delicate features and long eye-lashes, and of the lymphatic temperament. She presents livid red patches of various sizes on different parts of the body, viz: 1. On the radial side of left wrist; on the whole of left forefinger and adjoining side of middle finger; on the palmar surface of left thumb; on the inner aspect of left arm above the elbow joint. 2. On the radial side of the palmar aspect of first and second phalanges of right ring finger; on ulnar aspect of right fore arm near the elbow. 3. On dorsal surface of left foot; inner side of left leg and thigh. 4. On the inner side and also on the back of right leg; outer side of right thigh immediately above the knee; inner aspect of right thigh. 5. On both nates; on the back in the mesial line, at the level of last dorsal vertebra. 6. On the left supra-orbital region; on the ridge of the nose, from base to tip.

These patches are of a livid red colour and of a shining appearance, and vary in size from half an inch to five or six inches in diameter. They do not disappear on pressure. They seem somewhat thickened and swollen which gives them a raised appearance. In fact there is well marked hyperthrophy affecting alike the skin and subjacent areolar tissue. Their circumferences are well defined. The most of them are oval, the long diameter being in the axis of the body. There are few hairs on these patches, and these few are dry and brittle. She states that her hair has been falling of late; although it is yet plentiful on her head; but the hair on the eyebrows is scanty. The patches are painful on pressure, but feel numb to the patient. Tactile sensibility, and sensibility to heat and cold diminished slightly but certainly; and nothwithstanding that pressure causes pain, there is a certain degree of analgesia when the patches are tested by pricking them with a pin. Cutaneous Faradic sensibility, as tested by dry rheophores, completely abolished over the patches; Faradic muscular sensibility, as tested by moist rheophores, increased.

The diseased patches are hotter than the neighbouring skin, the difference ranging from one to two and a half degrees centigrade. The patient suffers no pain excepting an occasional darting pain from left shoulder down to tip of index finger.

No pain or anæsthesia on pressure over the vertebral column. Spleen slightly enlarged. Urine normal; no albumen or sugar. No fever.

September 25th. Complains of loss of appetite. A few new spots have appeared. One of the size of a rupee on the inner side of right thigh a little above the knee joint, and another of the same size in the right and left axillæ. These are exactly like the others in respect of colour, sensibility and temperature. Has suffered great pain in left index finger and in the patches on the nates. Felt feverish this morning, but without rigors. Pulse 112. Temperature 39.2°. Was ordered bromide of quinine.

September 26th. Pulse 100. Temperature 38.2° in the morning and at 4 o'clock p.m, the pulse was 110 and the temperature 39°.

September 27th. The temperature and pulse has fallen under the use of the bromide.

October 9th. Patient feels well as regards her general health. The hypertrophy of the patches has disappeared ; their colour is no longer of a livid red, but is decidedly coppery and they are evidently desquamating, As regards sensibility and temperature they are the same as before. Still suffers great pain in left forefinger, which is worst at night.

October 22nd. Patient has continued well and free from fever. The temperature of the patches still continues higher than that of the healthy skin ; but now only by a few decimals. There is still great pain in left index finger which, she says, sometimes becomes cold like ice. The temperature of this finger was found to be one degree less than that of the other patches. Since last report we observe marked muscular atrophy of interossei muscles, and of the thenar and hypothenar eminences. This is more marked in the left than in the right hand.

During the period included in the above observations the patient received no special treatment for leprosy.

Elephantiasis Græcorum

Y......, Aged 15½ years. The brother of the patient whose case is recorded above, is a creole of a fair complexion and light hair, but the skin has a washed out muddy look. Has suffered slightly from malarial fever.

Fifteen days after his birth a rash appeared all over his body, which lasted about six months. This rash is said to have begun upon the face, and afterwards spread to the rest of the body including the palms and soles, and was especially profuse on the head. After he recovered from this he seemed to be quite well, and enjoyed good health.

Four years ago he began to have sores on the extremities and then on the trunk. Any slight wound or abrasion, became difficult to heal. Phlyctænæ or blebs of various sizes, from a bean to that of an almond, frequently appeared on different parts of the body, and when healed up were followed by others. Sometimes these blebs were solitary, occasionally two or three appeared on one region.

Present condition.—General health good, no visceral disease. Numerous indolent sores on upper and lower extremities ; an indurated painful fissure of second phalangeal articulation of left index finger ; a deep circular fissure in the line of the distal phalangeal articulation of little finger of right hand, as if caused by a piece of string. The sores generally are about the size of a shilling or rupee ; not deep, but presenting a dry, glazed appearance. There is also a thickened, shining, circular patch of skin on back of right elbow. From its appearance it might have been the result of some chronic inflammatory process. It is in no way suggestive of leprosy. There is also slight œdema of right leg and malleolus, with small indurations on back of foot near the ankle-joint. The nail of second toe of right, and of first, second and fifth toes of left foot have fallen off; the great toe of right foot swollen and of a livid red colour, the nail has fallen off, and a large unhealthy looking sore occupies its site. On the trunk, especially on nates, a number of circular, white, cicatrix looking patches are observed There are also a few wrinkled spots resulting from phlyctænæ which have broken and discharged their serum.

Tactile and thermic sensibility every where normal. Cutaneous Faradic sensibility, tested by *dry* rheophores completely abolished in legs and feet, and in fore arms and hands; deep sensibility as tested by *moist* rheophores normal.

There is marked atrophy of the interossei and of the thenar and hypothenar eminences of both hands.

We hope to be able to publish in continuation cases of this disease in its different forms as seen in this colony; and we will thankfully accept carefully observed cases, which may tend to cast any light upon the causation of the malady, its rarer, or as we may say, *latent* forms, its precursory symptoms, progress, complications or treatment. A malady so terrible and intractable, and above all so common, surely claims the most earnest study and attention of every medical man. If the physician has to acknowledge with sorrow that in its fully developed form it is incurable, is it equally hopeless to find a remedy for it in its earlier stages ? If cure in any stage is hopeless, it causes must at least be discoverable, and we may hope remediable. The Editor, therefore earnestly asks for the assistance of his medical brethren in the investigation of the causes of the disease.

THE CINCHONA ALKALOIDS

Experiments were made in the Madras Presidency, in 1867 and 1868, in order to ascertain the therapeutical value, actual and relative, of the different cinchona alkaloids. The results have been published in a report drawn up by the Commissioners appointed to conduct the investigation. It has long been known that much of what has been manufactured and sold as sulphate of quinine has contained a large proportion of quinidine. The cinchonidine alkaloids which lately were thought to be, if not inert, at least so much less active and reliable than quinine, that they were seldom prescribed when quinine was obtainable. Quinine has been found by long experience to be so thoroughly trustworthy as a febribuge, that so long as it could obtained at a reasonable price there was no inducement to seek for a substitute, and the other alkaloids were thrown aside as worthless. The growing scarcity and increasing price of quinine has led to the investigation of their relative merits by this commission with the important result of establishing beyond dispute, that the sulphates of quinidine and cinchonidine are practically as valuable therapeutically, in cases of fever, as the sulphate of quinine. The following tables shew the results of the experiments instituted by the Madras Government :

Table exhibiting the ratios of failure per 1000 *cases* :

Sulphate of Quinine (chemically pure)…………	7.092
„ „ Quinidine………………………………	6.024
„ „ Cinchonidine…………………………	9.925
„ „ Cinchonine……………………………	23,255

Table shewing the number of cases treated with each alkaloid and number of failures.

	OFFICERS		SUBORDINATES	
	Cases	Failures	Cases	Failures
Sulphate of Quinine (pure)	530	5	316	1
„ „ Quinidine	221	3	443	1
„ „ Cinchonidine...	167	3	236	1
„ „ Cinchonine......	233	13	326	...
	1,151	24	1,321	3

Table shewing the per-centage of cases, in which less than 20 grains of the alkaloids checked the paroxysms.

	Number treated	Number requiring less than 20 grains	Number requiring more than 20 grains	PER-CENTAGE OF	
				Cures by less than 20 grains	Cures requiring more than 20 grains
Quinine (pure) ...	416	320	96	76.92	23.07
Quinidine	412	312	100	75.72	24.27
Cinchonidine	323	242	81	74.92	25.07
Cinchonine.........	385	282	103	73.24	26.75

The Commissioners sum up the results of their enquiries in the following terms: "They conclusively establish beyond doubt, that ordinary sulphate of quinine, chemically pure sulphate of quinine and sulphate of quinidine possess equal febrifuge power; that sulphate of cinchonidine is only slightly less efficacious; and that sulphate of cinchonine though considerably inferior to the other alkaloids, is notwithstanding a valuable remedial agent in fever."

THE WORKING OF QUARANTINE IN THE COLONIES.

It is well to for a community, as well as for an individual, to listen to the opinions of society upon their conduct. The remarks of the Editor of the *Lancet* although specially directed against the misdeeds of a neighbouring colony may not be altogether devoid of interest and instruction to ourselves.

"The only feasible plan therefore, (for preventing the importation and dissemination of epidemic diseases) is that adopted by the sanitary authorities of the Port of London, and, as we believe, now by the authorities of most of the outports. Information having been obtained as to the presence of epidemic disease, the ship is boarded by a sanitary officer, immediately after she has come to moorings. The sick are removed in an ambulance to the nearest proper hospital; the quarters and belongings of the sick are taken possession of and fumigated, disinfected, and otherwise cleansed under supervision. The obvious weakness of this plan exists in the fact that the questions asked by the Customs at the entrance of the port are not always truthfully answered. But reports as to work done in the Thames show that this plan affords a fair guarantee for prevention, and at the same time, a minimum of obstruction to commercial interests. But we think that power of detention and isolation for, say, forty eight hours ought to be given to port sanitary authorities in all cases where contagious and infectious diseases are known to exist or to have existed on board during the passage.

"But in spite of all that has been said and written about the futility of the old system of quarantine, it appears to be practised at most, if not all, our colonial ports in the ancient and objectionable form still carried out by some few—happily very few—continental nations. We will take the Cape colony as an example, because a notable instance of this barbarous procedure has recently occurred there. A mail steamship arrived in Table Bay some three months ago from England, with a case of small pox on board. The authorities immediately ordered the vessel with her crew and a large complement of passengers, to an anchorage many miles away and kept her there for twenty one days. No means of separating the sick from the healthy were provided, as there is neither hospital-ship nor any thing analagous to the old objectionable lazarette. At the end of the term the ship returned, and we believe, went into dock to discharge passengers and cargo, both having been unnecessarily subjected to forty instead of nineteen days' association with small pox. However, soon after the vessel had moored, another case of the disease was discovered. and the vessel with her unfortunate crew was again sent off for another three weeks probation. We have not yet heard the ultimate result of this extraordinary sanitary system, as it has affected the case under consideration. But with certain immaterial minutiæ, the same plan is adopted in the Australian and New Zealand ports. It is no novel occurrence for emigrant ships to be quarantined for an entire month on account of measles, scarlet &c., while the arrangements made for the treatment of the sick, and the accommodation of the healthy are deplorably, and it may be honestly said, disgracefully deficient***** The system as above exemplified is barbarous, unscientific, and utterly insufficient to secure the colony interested against the dissemination of any variety of zymotic disease."—(*Lancet*, August 4, 1877).

RADICAL CURE OF SMALL POX

A Surgeon writing to the Editor of the *Lancet* regarding the treatment he adopted for small pox in Bengal says :—

" The measures taken to prevent the propagation and spread of small pox were vaccination, fhe isolation of the sick from those that were well, and the radical cure of the disease by anointing the sick all over with a liniment composed of one part of carbolic acid to ten parts of linseed oil. This liniment was so used twice daily until the remains of the eruption peeled off the skin. This proved a most effectual cure for small pox. It acted like a charm."

DEFORESTING AND REFORESTING

BY THE EDITOR

An interesting article appears in the *Lancet* of September 22nd, 1877, on the subject of deforesting, founded upon the report recently presented to the Foreign Office by Colonel Playfair, Her Majesty's Consul General for Algiers. In this report the Consul states that the clearings upon a large scale in Algiers began in 1845, and since then have been going on with ever-increasing rapidity. The influence upon the climate has been well marked. According to meteorological observations the annual rainfall has been gradually diminishing. From 1850 to 1862 it averaged 770 millimètres, and in the fourteen succeeding years the average fell to 639 millimètres. Along with this diminution in the rainfall, and as a consequence of it, the soil is less productive than it was formerly, something like a famine being imminent in Western Algeria. To the same cause, viz: the extensive destruction of forests he ascribes the decadence of Tunis. The Editor remarks that the most complete example of the pathological aspect of the question of deforesting is to be found in the disastrous epidemic of 1867, and the deterioration of climate which has taken place in our colony, which until then was looked upon as one of the healthiest countries in the world.. "There is little doubt", he says, "that the principal remote cause of this terrible visitation was the reckless clearing of the forests which had covered the slopes of the mountains, and the climatic disturbance that followed thereupon. The total amount of rain falling throughout the year was, perhaps, not so much altered as its distribution. Especially it became apt to fall in irregular impetuous torrents, flooding the bottom lands and depositing there and on the banks and in the outlets of the streams immense quantities of detritus and vegetable matters, and so exaggerating to an extent previously unknown in the island the conditions favouring the development of malaria". The writer then passes on to the question of the destruction of forests in Central Europe and the unfavorable effects already beginning to be manifested on the climate and public health from this cause.

Nothing seems to be more fully established by general observation than the fact that the extensive destruction of forest leads to protracted droughts, destructive inundations, general decrease of humidity, and changes in the temperature varying according to conditions which we cannot enter into at present. These climatic disturbances lead *directly* to sterility of the soil, frequent failure of crops, and decadence of agriculture ; and *indirectly* to the evolution of malaria and the deterioration of the health of the community.

Inundations followed by droughts and a high temperature are the conditions recognised as most essential to the outbreak of fatal epidemics of malarious fever in warm conntries. Craigie in treating of the etiology of remittent fever remarks as follows :— " The various pestilences represented by Livy and Dionysius Halicarnassus to have prevailed in ancient Rome and other districts in Italy, are ascribed to inundations of the Tiber or Po or some other river***. In the summer of 1780 a violent remittent prevailed at Bassora, so general in its attacks and so fatal in its effects that it destroyed 25,000 persons and was called a plague ; and this was owing to an inundation of the Euphrates, which after moistering a great extent of the banks of the river was speedily followed by intense solar desiccation, during which the fever appeared. The bilious remittents of Senegal described by Schotte, and those of Sierra Leone described by Winterbottom and Boyle, appeared under similar circumstances."

The important influence of forest both upon the temperature and rainfall, upon the productiveness of the soil and the health of the community deserves more attention from the authorities then it has yet received. We could wish to see the replanting of the cleared and uncultivated lands, the sides of the highways and cane-field roads more vigorously carried out. It is a sanitary work of *primary* importance, and unlike many other sanitary works, it will ultimately be profitable even in a pecuniary point of view.

SYPHILIS, SPONTANEOUS FRACTURE OF LEFT LEG, AMPUTATION, RECOVERY

BY S. W. LENONN, ESQ.

District Surgeon, Surgeon [illegible] Hospital, &c.

Govind, aged 40, a native of Calcutta; admitted on the 18th August, 1877.

History.—Had gonorrhœa four years ago: and about two years afterwards had chancre and gonorrhœa. The chancre was situated on the upper surface of the glans penis and was followed by suppurating bubo; treated with mercurials, but it was seven months before the chancre healed. During all this time he suffered from severe rhumatic pains, but never had any eruptions on the skin.

Eight months ago an ulcer appeared on the anterior surface of left leg, about the size of a sixpence; and about the same time a few small ulcers appeared on the hard palate; and the right elbow-joint became swollen and painful. Several of his front teeth of upper jaw fell out; and the hard palate and nasal bones were destroyed. The sore in the leg gradually became worse and discharged copiously. About seven days before his admission he felt that the bones of the leg had suddenly given way, and found that he could bend the lower portion on the upper almost to an angle of 45 degrees.

Condition on the admission.—The patient is emaciated and has a worn-out appearance; nose sunk; hard palate destroyed, upper incisors fallen out. Right elbow-joint swollen and anchylosed, and arm bent at right angle. Cicatrix of bubo in right groin and cicatrix of chancre on the glans penis. A large unhealthy looking ulcer on the anterior surface of left leg about the middle. The edges of the sore are raised and everted, with great induration of surrounding tissues. There are two openings communicating with the medullary canal of tibia, and from these there is an ichorous, offensive discharge. He does not suffer much pain even on movement.

Operation.—As the patient was evidently being worn out by the discharge, and made no improvement under treatment by iodides and tonics, it was resolved to remove the limb below the knee.

The operation was performed on the 27th August. A short anterior and long posterior flap were made; and on exposing the bone, it was found that the knife cut into it, giving the feel as if cutting through soft plaster of Paris. The medullary canal was found to be very much expanded and surrounded by a thin layer of partially softened bone.

Progress of case.—The patient rallied well after the operation, and sat up in bed and assisted in the dressing of the stump. A small abscess formed about ten days after the operation, but the wound itself healed by the first intention. His general health improved gradually and a good serviceable looking stump has resulted. After the operation the patient continued to take iodide of potassium in 10 grain doses and citrate of iron and quinine.

REMARKS

On examining the bones after amputation we found the tibia and fibula destroyed by caries. The fibula at the part opposite the fracture was represented by a fibrous cord. Above the seat of the fracture the medullary canal was expanded at the expense of the bone substance, which was only a line or two in thickness. The medulla was soft and yellow. The bones of the tarsus and metatarsus had undergone the same changes as the tibia, being softened and easily cut with the knife.

The accompanying lithograph, from a drawing by Mr S. Tranquil, will illustrate the condition of the bones.

[illegible] TELIANA [illegible]

N° III] [July, 1878

CLINICAL WORK

A QUARTERLY JOURNAL
OF
THERAPEUTICS AND PUBLIC HEALTH

Edited by
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CLINICAL WORK

JULY, 1878

CYCLOPÆDIA OF THE PRACTICE OF MEDICINE

EDITED BY DR. H. VON ZIEMSSEN.—

MALARIAL DISEASES BY PROFESSOR HERTZ, OF AMSTERDAM.

SECOND NOTICE BY THE EDITOR.

In our last issue we commenced a brief sketch of the article by Professor Hertz, on malarial diseases, appearing in Ziemssen's Cyclopædia of the Practice of Medicine, and we shall now proceed with our review of the article in question.

Professor Hertz describes intermittent fevers as they are seen in Europe, recognizing, although not dwelling at any length upon, the different types accepted by Nosologists, viz : the quotidian, tertian, and quartan, and their varieties. The remittent and continued *forms* of malarial fever are considered together under three grades, the light, the heavier and the highest grades. We shall give in full our author's description of these different grades.

> The *first grade*, that of the *lighter forms*, embraces the bilious or gastric remittents, which often appear in great numbers during a hot summer, in malarious districts, associated with gastro-intestinal catarrh and icterus. It not infrequently happens, as I have observed in Holland, that the actual attack is preceded by gastric disturbances, loss of appetite, nausea, irregularity of the bowels, with occasional irregular rigors and dizziness. Usually, however, the attacks begin suddenly, and without warning, with a moderate chill, followed by loss of appetite, nausea, the raising of sour material from the stomach, a general feeling of sickness, with severe headache, dizziness, ringing in the ears, sleeplessness ; and restless nights, jaundice, and a colorless diarrhœa follow afterwards. Sometimes an herpetic eruption is developed about the lips ; bleeding at the nose is not uncommon, neither is a light grade of bronchitis. With all this, sensitiveness is developed

over the region of the spleen, with an enlargement of that organ, not difficult of demonstration. The disease usually reaches its end in three, five, or ten days. More rarely it does not terminate for some weeks, and then it runs the following course. The exacerbations, which occur daily, twice a day, or every other day, and which are not infrequently ushered in by a new chill, are followed by more and more distinct remissions, with sweating, and an abatement of the general ill-feeling, these remissions not seldom passing, by degrees, into actual intermissions. I have occasionally seen patients in whom, after the temperature had fallen to its normal standard, the gastric disturbances would persist for several weeks, accompanied by no small degree of jaundice.

The *second grade*, that of the *severer forms*, is especially characterized by a more continuous course, with only here and there marked remissions, especially at the beginning of the attack. Although beginning as a sthenic fever, they not infrequently early assume a typhoid or adynamic character, and may, aside from the greater intensity of the general disease, be associated with particular and pernicious local affections, as with epileptic, tetanic, paralytic, or comatose seizures; furthermore, with algid and dysenteric conditions, as well as with parotitis, pneumonia and inflammation of the spleen, all of which are likely to end in death.

The disease usually begins with severe headache, delirium, and a heavy chill. The primary disease, when not complicated with any of the conditions mentioned above, lasts, according to Griesinger, from seven to fourteen days. Recovery follows, with marked remissions and sweats, or by transition to a simple intermittent, although relapses are said to be frequent.

The *third grade*, that of the *severest forms*, depends, according to Griesinger, either upon specially unfavourable constitutional or external conditions, (debilitating treatment, septic influences, etc.), or on the too great intensity of the pernicious features. They are particularly distinguished by the most marked and extreme adynamic character, by a tendency to rapid collapse, and by the early condition of apathy into which their victims fall.

These attacks sometimes begin in a mild form, soon, however showing indefinite and irregular remissions and exacerbations, the former of which become constantly shorter, and the latter longer and more exhausting, with the temperature of the body below the natural standard, thus indicating the adynamic character of the disease. Patients complain of pain in their limbs and joints, with difficulty of moving the same; but the feeling of pain is soon blunted, sight is sometimes dimmed, memory is weakened, drowsiness and stupor are prominent, or very rarely delirium and wakefulness. The patient falls into a state of mental apathy, and death usually follows while he is in an algid and comatose condition. At other times the disease shows the gravest symptoms from the very commencement, beginning with a chill and heat, followed in a few hours by a state of complete exhaustion, with disturbed intellect, which state is sometimes accompanied by great restlessness and delirium. Respiration is apt to be sighing; the pulse small and rapid, 100 to 140; the tongue coated white, or clean, pale and rough; the skin hot and dry; the abdomen distended and painful; thirst extreme, and the spleen enlarged and sensitive. There is frequent vomiting, and the strength gradually declines, so that death may occur at the end of five or six days...... Occasionally, during the course of the disease, other pernicious local symptoms are developed such as enormous swelling of the liver or spleen, with the occasional formation of abscess, purulent collections in the serous cavities, pneumonic infiltration, icterus of the skin, partial œdema, bed sores, gangrene of external parts, petechiæ, epistaxis, hæmoptysis, hæmatemesis or dysenteric and choleraic dejections."

There is the utmost difficulty in attempting to describe the protean features of this malady. No doubt our readers will call up many cases that cannot be arranged under any of these *grades*. Still the descriptions answer, in a general way, to the character of the fevers which we treat in daily practice. Professor Hertz acknowledges that he has only delineated the leading types of the disease, and admits that these types could be largely increased as every épidemic has some peculiarity. He describes as a variety the *fièvre bilieuse hématurique* of French authors, the ictero-hæmaturic of our practitioners. He states that it ordinarily begins as a simple intermittent, which after a few paroxysms becomes severe; then the urine becomes dark brown, rich in blood, the skin jaundiced and the liver and spleen enlarged. We believe that there is no such disease. In all the cases of so called ictero-hæmaturic attacks, examined by us, the urine although apparently containing blood, was found to be entirely destitute of even a stray blood cell, the characters of the urine depending upon the presence of hæmato-globulin; and, occasionally, pigment.

The following account of *intermittens perniciosa pneumonica* and *pleuritica* is interesting:—

"During the chill and the hot stage the patients are seized with dyspnœa, they cough much, without expectoration, and complain of the most violent pain in the chest. The pulse soon becomes full, rust coloured sputa appear, dulness on percussion, and increased vocal fremitus are manifest, while auscultation reveals, at first crepitant rhonchi, then bronchial breathing and bronchophony. During the sweating stage a decided remission of the fever takes place, as well as an abatement of the symptoms, subjective and objective, which may almost entirely disappear during the intermission that follows. In case of a renewed paroxysm, however, of the quotidian or tertian type, these symptoms will recur. The infiltration will now increase somewhat in extent, and remain stationary during the intermissions,...... the lower lobe of the left lung appears to be the one generally involved. If timely recourse to treatment by quinine is neglected, these cases are apt to end fatally at about the fourth or sixth paroxysm.

" Some years ago I had the opportunity of observing a case of *intermittens perniciosa pleuretica* which is even more rare than the pneumonic form. The subject was a very powerful man, thirty-eight years of age, who was seized, about two o'clock at night, with chilliness, very severe pain in the left side of the chest and a dry cough. Towards eight in the morning, while the symptoms were all present in the highest degree, I discovered a distinct, rough, friction sound, the temperature being moderately elevated and the skin hot. Wet cups and an opiate were ordered, and I was not a little suprised the next morning to find the man entirely free from pain and from all tendency to cough, and nothing wrong to be discovered on auscultation. At twelve o'clock that night, however, the attack was repeated. At nine in the morning, I found the same symptoms as two days before, although in greater intensity, and the friction sound was not only more plain but more widely extended. As I found the patient, at 4 P.M., bathed in perspiration, almost free from fever and from pain, and as I found him well again the next morning, I ordered him a few large doses of quinine, whereby the disease was cured without another attack."

These forms of disease are no doubt rare. We have seen several instances of intermittens pleuritica, (*No.* 1, *pages* 6 *and* 7) following a somewhat different course from that observed by Professor Hertz in the case now related; but we do not think it rare to find pneumonia and pleurisy considerably modified by the malarial poison.

Professor Hertz gives a remarkably good account of intermittent fever as seen in children. He says :—"As a general rule, children suffer from the quotidian type much more frequently than from the tertian or quartan...... The disease may appear in infants two months old. At the beginning of the attack the child becomes quiet and sleepy, the skin grows cool, pale, and wrinkled, the lips and nails become blue, the nose pointed and the eye sunken ; at the same time the pulse is small, often scarcely to be counted, and the respiration short and frequent. The trembling and shaking, which is so well marked in adults and older children (*over two years*) is altogether absent. After a period of from ten minutes to an hour the hot stage follows. The patient becomes restless and excited, the face grows red and glowing, the pulse stronger and fuller (120 to 130) the carotids and fontanelles pulsate strongly and the skin is dry and hot, as are also the lips and tongue. Sometimes children fall into a stupor, or older ones may be seized with convulsions. After an hour or an hour and a half, the pulse falls and a slight, generally partial, perspiration breaks out, this never being so general and profuse as in older children and adults. Aside from these fully developed paroxysms, it is not uncommon to find incomplete forms in which the chill is lacking, and the hot stage with a very light sweat constitutes the attack."

Coming now to the prophylaxis and treatment of malarial diseases, we observe that Professor Hertz believes firmly in the prophylactic action of quinine. The facts to which he refers, and his own experience, lead him to consider the prophylactic effects of quinine as established. We fully concur in this opinion. He recommends four or five grains to be given morning and night to persons exposed to malarial influences. We believe this to be insufficient in tropical countries, especially if the district is decidedly malarious and the season unhealthy. We have found it necessary to give not less than fifteen to twenty grains a day in order to ensure the safety of Europeans travelling in the unhealthy districts of Madagascar. Of course quinine alone will not prevent fever, unless a prudent regulation of life be observed, and ordinary precautions be adopted.

Professor Hertz advocates vigorous purgation in pernicious fevers of a sthenic character, especially in pernicious icteric intermittents, and he thinks that calomel in doses of five to eight grains repeatedly is the best purgative to employ. In the delirious form, cold compresses to the head, derivation by enemata, and counter irritation to the extremities are the adjuvant remedies recommended.

In ordinary cases of simple fever he counsels the administration of quinine alone. When a fit of indigestion seems to have been the determining cause of an attack he advises the preliminary use of an emetic. The same rule is observed in respect to laxatives. He only gives them when the fever is accompanied with decided constipation. This advice we think to be upon the whole sound even in the fevers observed in warm climates. Although we believe that purgatives are frequently of the greatest service in the simpler forms of malarial fever, we deprecate the unmeaning appeals to laxatives and emetics so common among many practitioners. In simple intermittents he advises the administration of nine to twenty-two grains of quinine in a single dose, or seven and a half to twelve grains twice or three times a day. In the pernicious forms the doses recommended are thirty to forty-five grains, and when the quinine is rejected by vomiting, he combines it with opium and aromatics, or administers it *per rectum* in doses as high as thirty grains combined with opium. When used hypodermically he considers the proper dose to be one-third or one-fourth of that administered by the stomach. For hypodermic injection he approves the formula of Barnatzik; Sulphate of quinia, 150 grains; hydrochloric acid, 50 minims, and distilled water, 4½ fluid drachms.

The estimate which our author forms of the other alkaloids of the bark is pretty much that which we have arrived at here in Mauritius. He acknowledges their febrifuge properties, but justly maintains the superiority of the sulphate of quinine.

Respecting the *modus operandi* of quinine he remarks that we have thus far obtained but little insight into the method of its producing these (*curative*) effects, whence it follows that all attempts to arrive at a reasonable theory with regard to the way in which it acts in malarial fever have proved fruitless. He thinks that the eucalyptus globulus, ranks next to quinine in its therapeutical power, being distinguished by the rapidity of its action (usually preventing the third attack) having no disagreeable after effects, tasting better than quinine, and being far cheaper. The alcoholic extract is the preparation he prefers. It must be remembered that it has been chiefly tried in intermittents, for the treatment of which it appears to be a useful remedy, but we do not know that it has been very extensively tried in the forms of fever most frequently met with in this Colony. We hope that some of our medical friends will give us the results of their experience respecting a medicine so highly recommended. Professor Hertz considers arsenic to be adapted for " cases in which quinine fails, in old, inveterate, and frequently relapsing intermittents, and in malarial cachexia as well as in neuralgias, which often yield to arsenic alone when all other remedies have proved unavailing. It is contraindicted during the existence of disturbance of digestion, in extreme old age, or in pernicious fevers. Long continued use of arsenic is also to be avoided, and during its use supporting diet should be taken and in case of cachexia iron should be combined with it."

For reducing enlarged spleens he recommends quinine as long as the thermometer shows even slight febrile movements, and on account of the anæmia so common in these cases he combines it with iron. Cold baths, with jet douche over the region of the spleen and liver, are useful after all febrile movements have subsided, along with the iodides of potassium or iron with the use of purgatives and mineral waters as adjuncts.

We now take leave of our author whose treatise may be looked upon as one of the most valuable of recent contributions to the subject of malarial diseases. Our object has been rather to give the opinions of the writer than our own; so that we have not thought it necessary very minutely to criticise the various subjects of the extracts given above. The work itself will amply repay the study of our readers, being at once philosophical and thoroughly practical—the result of careful study and extensive observation.

TETANUS

INTRODUCTORY NOTE BY THE EDITOR

The subject of tetanus has lately been very fully discussed in the English Medical Press. It is one of very deep interest to those who practise in this Colony, the disease being here a frequent result of trifling injuries or operations. It is with great pleasure, then, that we lay before our readers the first instalment of a series of practical papers upon the subject. In the next number we hope to be able to give a short statement of the cases treated during the past five years in the Civil Hospital, the modes of treatment, and the results obtained.

The first article is by Dr. Bolton, and is in every respect an interesting and instructive one. He gives us the results of a special method of treatment. And these results are certainly exceedingly satisfactory. The treatment which he advocates, and which in his hands has proved remarkably successful, is, as our readers may be aware, recommended by good authorities, and has perhaps been scarcely so much as tried in this Colony, excepting by Dr. Bolton. Hunter and Rush practised and recommended the application of blisters in tetanus. Dr. Reid (*Trans. of K. and Q. College of Physicians vol.* 1, *p.* 122) advocated the same treatment which has now found so able an exponent in Dr. Bolton. Dr. Rees states that in America this treatment by blisters along the spine is generally relied upon, "and with singular success." We think that Dr. Bolton's cases show that the treatment by blisters deserves the most serious consideration of every practitioner.

The case reported by Dr. Borchgrevink, of Madagascar, is also in many ways a remarkable one. The treatment adopted is an old one, viz., large doses of morphia and calomel. It is a treatment which he saw successful in two cases of traumatic tetanus treated by the Editor in the Hospital at Antananarivo. The case now recorded is the first, so far as we are acquainted with the literature of the subject, in which dislocation of the femur has resulted from tetanic spasms. Cases are known in which the thigh bones have been fractured, but this case is, we think, unique in this respect that the thigh bone was actually dislocated by the violence of the spasms. That such large doses of morphia were tolerated in this case is also remarkable. The patient was an adult, although his age is not given, but the amount of morphia consumed in little more than a fortnight was above 200 grains. Stillé recoommends, however, half a grain to one grain of a salt of morphia every one or two hours until some sensible impression is produced, and he suggests that counter irritation to the spine should also be used at the same time. Dr. Watson mentions an instance in which a lady suffering from tetanus, "swallowed, in twenty successive days, upwards of 40,000 drops of laudanum, which is at the rate of more than four ounces a day," and he adds—the lady recovered. We have been the more particular in dwelling upon this case because many authors have condemned the use of opium in tetanus mainly upon theoretical grounds, although it has not yet been satisfactorily proved that any other narcotic has been used with equal success. The favourite remedy at the present time is chloral, and successful cases have been reported under its use; but the growing experience in Europe is, we hear, diminishing the reputation it has lately enjoyed.

THE APPLICATION OF BLISTERS IN TRAUMATIC TETANUS

BY Dr JOHN BOLTON,

Government and Poor Law Medical Officer, Savanne.

The treatment of such a terrible disease as traumatic tetanus has been hitherto so unsatisfactory that at one time it was almost given up as hopeless.

All the so called antispasmodic medicines have had their day, and have all more or less failed. Amputation of the limb, on which was situated the wound that gave rise to the tetanus, division of the nerve leading to the injured spot, have also been tried; they have answered with one medical man and totally failed with another.

Starting from the principle that tetanus depends upon excentric irritation carried to the spinal cord and medulla oblongata by the excito-motor nerves, I came to the conclusion that once the irritation, congestion, or inflammation was established, it were better to attend to the nervous phenomena and ignore, so to speak, the wound, the primary cause.

To my mind the best course to follow under these circumstances is to try and act upon the spinal marrow itself, and this by means of blisters. Blisters are used in cases of inflamed lungs, pleura, liver, &a., with marked success; why should not the same good effects obtain in traumatic tetanus, through their action on the cord ? This has been my practice for the last seven years, and with what success will be seen by the cases which I will quote presently. This is the way I apply the blisters.

A blister is applied on *each side* of the spinal column, from the neck (opposite the 3rd cervical vertebra) down to the last lumbar vertebra, the width of the blisters being one inch each. Between the blisters will be a space having one inch in width, occupied by the spinous processes of the vertebræ. When the blisters have risen, all the serum is to be drawn out and the raised cuticle pressed gently back, and dry cotton wool applied over the whole. At the end of a few days they will be dry, the cotton wool must then be removed and the parts painted over with Liq. Epispasticus, or fresh blisters applied and treated as above. This blistering must be repeated until all the symptoms have abated. Of course the patient's strength must be kept up by stimulating nourishment. The bowels are to be attended to as soon as the patient is seen. A dose of croton oil should be given at once, and injections of castor oil or turpentine every other day.

I have attended fourteen cases of tetanus within the last seven years, 13 traumatic and one idiopathic—of these, 7 were treated in the Souillac Poor Law Hospital—the others (all poor people, Creoles and Indians) were attended at their own domiciles.

Of those treated in the P. L. Hospital, 5 recovered.

Of the others, three died.

CASE I

Buttoo, æt. 35, a powerful Indian, admitted into P. L. Hospital, Souillac, on the 17th February, 1871.

The patient was kicked by a horse, over the right tibia: ten days after he got wet, and three days after the wetting he was admitted with *trismus*, the jaws could only be separated sufficiently to admit one finger; great rigidity of dorsal muscles; great difficulty of swallowing; regurgitation through the nostrils; no marked opisthotonos.

On admission he was ordered opium and a dose of calomel and poultices were applied to the sore, which was rather ugly.

18th. Jaws still very stiff. Rigidity of back so great that the patient cannot bend it. Sense of constriction of chest very distressing.

19th. No change. Blister 3 by 3 to the neck.

20th. No change. Continue the opium.

21st. No change. Increase the opium.

22nd. Well marked opisthotonic spasms at frequent intervals. Profuse sweating. Great difficulty of swallowing.

Hypodermic injections of ¼ gr. of morphia every 3 hours.

23rd. Passed a bad night. Spasms more frequent. Great rigidity of recti abdominis muscles. Chest fixed, breathing short, hurried. Trismus more marked. Emaciation. No appetite. Constipation. Continue the injections every second hour. Calomel gr. v, *statim*. Ol. Ricini in 4 hours.

24th. Very bad night again. Distention of abdomen. Continue injections. Repeat purgatives.

25th. No change. Continue treatment. No change in treatment till the 27th when finding no remission in the symptoms, I ordered a blister on each side of the spine from neck to loins. Stop injections.

28th. Feels better to-day. Can lift his head up a little. General rigidity still very marked. Blisters rose pretty well. Dry cotton wool to the blisters.

March 1st. Decided change for the better. The jaw still very tight, but patient's whole appearance very encouraging, spirits more cheerful. Eats a little. Some Lin. Cantharidis applied to all the spots where the blisters did not rise.

3rd. Very much better. Can open mouth to half its ful extent. Rigidity of muscles much less marked. Can stand, and, with assistance, walk a little. Breathes more fully. Tetanic spasms when spoken to suddenly.

4th. Still further improvement. Can open mouth better. Is able to stand and turn round by himself.

5th. Blisters dry. Repeat two more.

6th. Can sit up in bed and eat by himself. No *signs of Tetanic spasms to-day*. Sleeps well.

9th. Convalescent.

18th. Discharged cured.

CASE II.

Ruggoo, æt. 30. Admitted 2nd February 1873. While cutting grass, he cut the ball of his left thumb; eight days after had lockjaw and opisthotonos.

February 2nd. *Present state.*—Jaws can only be separated three lines. Masseters as hard as wood. Dyscataposis very great. Rigidity and spasms of muscles of back. Risus Sardonicus. Occasional slight opisthotonic spasms.

Blisters to each side of spine from nape to loins. Calomel at night, oil to-morrow. Milk oz. xxx. 2 eggs. Sago.

3rd. No sleep last night. Freely purged this morning. Much better. Swallows with less difficulty. Can walk a little. No opisthotonos. Cotton wool to blisters.

4th. Slept a little last night. Deglutition easy.
5th. Still improving.
6th. do. do.
7th. do. do. Blisters dry. Repeat blisters.

8th. Can open mouth to full extent. Eats well. Full diet.
9th. Sleeplessness. No tetanic symptoms.
12th. Very much debilitated. Sago, eggs, wine.
March 3rd. Discharged cured.

CASE III

Ooledi, æt. 20. A very powerful young Mozambique. Admitted 7th April 1876, for a crushed toe, which was treated with tinct. benzoin.

February 20th. A piece of tendon was removed to-day as it was dead.

26th. Trismus set in during the night. This morning there is trismus. Opisthotonos and the risus sardonicus are unusually well marked.

Blister to each side of the whole length of the spine, two inches wide.

Calomel gr. 6. Pulv. Doveri gr. 10 *statim*. Oil in 4 hours. Beef tea *ad libitum*.

27th. Trismus more marked to-day. Pulse full, soft; did not sleep at all; was purged but twice with the oil. Blisters rose well. Took about 3 oz. Ext. Carnis yesterday.

28th. Same state. Blisters dry.

29th. Repeat blisters.

30th. No sleep last night. Bowels confined. Hæmaturia. Trismus slightly less. Calomel, oil, tisane of herbe à papillon and nitrate of potass.

2nd. Trismus much less marked to-day. Opisthotonic spasms less frequent. Had a good hour's sleep last night. Teeth can be separated far enough to admit a finger. Hæmaturia still the same. Continue the tisane and gallic acid.

3rd. This morning there is marked improvement. Opisthotonic spasms have been so rare through the last night that patient could snatch intervals of good sleep, amounting altogether to about three hours. Patient asks for solid food and wine, which is granted.

4th. Dental arches can be separated one inch and a quarter. Hæmaturia less.

6th. Hæmaturia stopped.

12th. Convalescent. Debility.

July 4th. Discharged.

CASE IV

Moïse Tranquille, æt. 21. Admitted 19th Dec. 1876. Traumatic tetanus following crushed finger.

Blister on each side of spine from neck to loins.

Dec. 20th. Blisters rose well. Trismus still marked. Dental arches can only be separated to admit one finger. Occasional slight opisthotonos. Hæmaturia. Gallic acid.

21st. Could not sleep last night through the frequency of the opisthotonic spasms. Deglutition very difficult. Hæmaturia stopped. Took about two pints of chicken broth during the night. Dental arches can be separated sufficiently to admit the thumb. To have 20 grains of chloral at bedtime.

22nd. Slight improvement. Night was pretty good, altho' there was no sleep. The fits of opisthotonos were farther apart and of short duration. Took over 90 ounces of broth during the night, chloral hydrate grs 30 at bed time. Wine oz. vi. Broth *ad libitum*.

23rd. Slept about three hours last night. Opisthotonic spasms very marked. Rigidity persisted during sleep. Thumb passes freely between dental arches.

24th.—The parents this morning refused to allow him to be kept in Hospital and took him home, where, altho' he was attended by me, he had not the benefits of an hospital and died three days after.

CASE V

Dhowtal, æt 30, admitted 13th December, 1877. Traumatic Tetanus, from wound of foot.

Same treatment as the other cases. Was convalescent on the 13th day after his admission and discharged 8th February, 1878.

CASE VI

Félix Coëffique, æt 31, admitted 5th January, 1878. Admitted for acute traumatic tetanus following a lacerated wound of left hand. Same treatment as the above. Died early in the morning of the 7th. This patient was addicted to drink.

CASE VII

Gooroosamy, æt 12. Traumatic Tetanus following a wound of the hand. Same treatment. Cured.

The above are the cases treated in the Poor Law Hospital of Savanne under my charge.

The other cases are :

1o. A young Indian boy of *Bel Air* Estate, who fell from a tree and cut his hands and face. Cured.

2o. A creole lad. Cut from an axe across the left foot. *Beau Bois* Estate. Same treatment. Died.

3o. An Indian boy on *Constance* Estate. Traumatic tetanus from a cut finger. Same treatment. Cured.

4o. Nagadoo, a new Immigrant who was found in a cane field where he had spent the night in a pouring rain, died thirty hours after he was seen by me. Same treatment. (*L'Union* Estate.)

5o. Mandagou, an old Madrassee. Traumatic tetanus following the opening of an abscess of the scrotum. Same treatment. Died. (*Souillac Village.*)

6o. A young Indian boy on *St.-Félix* Estate. Tetanus after wound of knee. Same treatment. Cured.

7o. Lastly, a case of idiopathic tetanus at *L'Union* Estate Hospital. Same treatment. Cured.

These results are to my mind so encouraging that I hope all my confrères will give the treatment a fair trial, and I can only hope that it may prove as successful with them as with myself.

TETANUS, FOLLOWING PIROGOFF'S AMPUTATION, DISLOCATION OF HIP-JOINT, TREATMENT BY MORPHIA, CURE.

D^r CH. BORCHGREVINK—MADAGASCAR.

A. B. The patient who had been formerly under the treatment of Dr Davidson for disease of the foot, consulted Dr Guldberg at the Antananarivo Dispensary. We diagnosed *necrosis ossis astraguli et calcanei,* and having, in vain, tried to remove the diseased bones, we performed Pirogoff's operation, and everything seemed to go on very well. Dr Guldberg left the patient to the care of his students and went down to the Betsileo country. About a fortnight after the operation, and when the wound had begun to heal, the patient's relations came to tell me that he could not eat anything or rather that he could not swallow. I went, of course, to see him and found him suffering from tetanus. I regarded the case as almost hopeless, but recollecting two instances in which morphia in large doses along with calomel proved successful in the practice of Dr Davidson, I resolved to give it a trial. He tolerated very large doses of morphia (about one grain every three or four hours, in all about half an ounce). After keeping on with this treatment for about a fortnight, he got a little better; but in the meantime the spasms had dislocated the hip-joint. I did not dare attempt the replacing of the dislocation while the disease continued for fear of making the tetanus worse. After a month I tried to reduce the dislocation but failed. However, a new joint has formed and the man has got a shoe made for his amputated foot, and he is now walking about.

BODLEIANA·BIBLIOTHECA·

MEDICO-LEGAL CONSIDERATIONS

ON

RUPTURES OF THE SPLEEN.

BY Dr F. V. POUGNET,

Acting Superintendent, Government Lunatic Asylum.

Prior to the great epidemic of malarial fever in 1866-67, ruptures of the spleen were comparatively rare; but since that period, owing to the almost universal prevalence of miasmatic poison, the spleen at any period of life has been found to be the seat of chronic enlargement (hypertrophy), more particularly among the lower classes, where poverty, want of proper care and treatment are superadded to malaria. If these be taken into consideration, it is not surprising, knowing the quarrelsome habits of the lower classes in general, and of the Indians in particular, that ruptures and even stabs of the spleen should be so frequently met with in Mauritius. I have met with only one real case of spontaneous rupture of that organ.

I have not observed ruptures of the spleen to be more frequent at any particular season of the year; but I have observed in almost all cases when rupture has been the immediate cause of death, that the spleen has invariably been found enlarged, sometimes enormously so, as well as soft and friable. The capsule too has been found extremely thin and lacerable; so that the slightest blow, kick or fall, has, in many cases, caused rupture followed by hæmorrhage into the peritoneal cavity, and death.

I have also likewise observed here, as it has already been observed in India, that the enlargement or hypertrophy of the spleen does not appear inconsistent with a fair amount of health. Healthy spleens are also liable to be ruptured by severe beating, kicking, or collision, but such cases are comparatively rare in Mauritius.

Connected with the above subject are several medico-legal points of paramount importance, namely :—

1o. *How long can a person live after his spleen has been ruptured or wounded ?*

It varies according to the circumstances of each case, the position and extent of the rupture or wound, the indurated or softened condition of the organ. Solid enlargement of the spleen seems to retard death.

Norman Chevers, justly states in his work, on *Medical Jurisprudence in India*, that death from rupture of the spleen may occur from a *few minutes* to *several days*, in some cases *instantaneously*. I have observed almost the same results from wounds or stabs of that organ.

2o. *Can a person with ruptured or wounded spleen walk or run a certain distance ?*

Yes. I have known and seen cases in which persons with ruptured or wounded spleens, could walk and even run a certain distance. Similar cases have already been recorded by Taylor, Norman Chevers, Casper and others.

The continuance of life after rupture or wound of the spleen shows how comparatively long, life may continue after even the most fearful internal injuries.

3o. *Of the state of the mind of persons found with ruptured or wounded spleen.* In most cases they were found with their mental faculties clear, and were even able to give an account of what had happened to them; in other cases they have been found in a state of collapse.

4o. *Is Ecchymosis a necessary result of violence applied to the abdomen ?*

Severe contusions are commonly followed by Ecchymosis; but there are numerous exceptions, and unless this is kept in view our evidence may mislead a Court of Justice.

Ruptures of the spleen may occur from blows, falls, collisions, or from wheels of a carriage passing over the body, without the *slightest marks* of injury appearing *externally*; on the other hand, the external ecchymosis has, in some cases, been traced directly to the seat of the rupture internally. In some few other cases the ecchymosis has been found in the right hypochondriac region; but in the majority of the cases, the ecchymosis was *subcutaneous* and found *only* on dissecting the abdominal walls within the vicinity of the splenic region; even this subcutaneous ecchymosis has, in some rare cases, been found wanting. It is, lastly, of the utmost importance to record that ecchymosis (external or subcutaneous) the result of violence, has been found by some good authorities *several weeks and even months after death*, provided, of course, that putrefaction has not entirely destroyed the whole of the soft parts of the body.

5o. *The degree of violence required to cause rupture of the spleen varies a good deal.* The violence may be direct or indirect—direct by blows or falls upon the abdomen, as in the case of a young man who ruptured his spleen in the harbour from a fall upon the edge of a boat; the rupture may also be caused indirectly by a fall upon the feet from a height.

6o. *The state of the spleen* has already been noticed, and it is of the utmost importance in a judicial autopsy to mention the state in which this organ is found, for when enlarged and disorganised, this may be looked upon as a predisposing cause of ruptures; so, likewise, the state of fulness or otherwise of the stomach must not be overlooked. Softening of the spleen has also been looked upon in India as the result of drunkenness. I have been unable here to differentiate the effects of alcoholism upon the spleen from those of malaria.

7o. *The external appearance of the body and of the abdomen* has in some cases led to the suspicion, and in a few cases to the certainty, that the distension of the abdomen was due to extravasation of some liquid into the peritoneal cavity.

8o. *Sequelæ of Rupture and wound of the Spleen.*—Ruptures and wounds of the spleen are almost *inevitably* mortal. Parts and even the whole of the organ have been successfully removed by surgical operation. It has, however, been recommended that in suspected rupture, an incision should be made in the splenic region to remove the ruptured organ; but can this operation (splenotomy) be safely had recourse to, or can the diagnosis be always so sure as to warrant such an operation?

9o. *Of the Seats of Ruptures.*—The most common seats have appeared to me, from careful observations of about forty cases, to be the *hilus* and *splenic vein*; in some cases the spleen was found lacerated and in others almost divided inte two. Ruptures have also been met with on the convex surface.

10o. *Of the quantity and state of the extravasated blood.*

The quantity has always been found *excessive*, and the state of the extravasated blood *fluid and dark, mixed up with masses of dark coagula* in the vicinity of the spleen and in the pelvic cavity. The state of the extravasated blood may be said to be *mostly fluid* with *scarcely* one fourth of the whole quantity in a coagulated state. This fluid state of the extravasated blood is common enough in serous cavities, provided that the extravasated blood is precluded from contact with atmospheric air. The fact that the blood does not coagulate when the atmospheric air is excluded may be looked upon as favouring internal hæmorrhage; and hence the large quantity of extravasated blood found at autopsies. But it must also be remembered that the blood has been found *quite fluid, although extravasated during life*; and I cannot, therefore, lay too much stress upon this fact, since it has already been falsely argued in our Court of Assizes that extravasated fluid blood should always be looked upon as a post-mortem lesion. I had last year a case of stab-wound of the left lung *(besides other mortal injuries)* in which the *extravasated blood was found perfectly fluid*; the patient survived his injuries 7½ hours.

SPONTANEOUS RUPTURE

Spontaneous rupture of the spleen may sometimes take place during the hot stage of fever, during pregnancy, or through muscular contraction, or from overloading of the stomach, &c. From the reports of several cases of suspected spontaneous rupture, only in one case have I been able to trace the history of the death of a prisoner who died shortly after a meal (*vide case* VI).

In this case the extravasated blood was remarkable. It sprang in a coagulated layer from the seat of the rupture involving the great omentum as an "*éperon*" over the viscera anteriorly; there was also found some dark fluid blood near the spleen and in the pelvic cavity.

Cannot this coagulated state of the blood in layers (en nappe) be looked upon as a differential dignostic sign of spontaneous rupture of the spleen, since I have never met with it in ruptures from violence?

Subjoined is a summary or outline of some cases of ruptures or wounds of the spleen extracted from my case-book whilst Acting Police and Prison Surgeon.

Case I.—A creole Indian aged 38, was found dead after fighting.—Autopsy.—No appreciable external mark of violence; on dissection a subcutaneous ecchymosis was found between the 9th and 10th ribs in the left side. Peritoneal cavity distended with large quantity of dark fluid blood mixed up with coagula (dark). Total quantity of extravasated blood about two bottles. Spleen very much enlarged and weighed one pound and twelve ounces, softened and lacerated. Stomach distended with undigested food. Other viscera healthy.

Case II.—An Indian man aged 40, received a kick in the left side from his master (an Indian) whilst in a state of intoxication. He drank some water, which he vomited, and died shortly after.—Autopsy seven hours after death.—No external signs of violence could be seen. On dissecting abdominal walls a subcutaneous ecchymotic patch was found between the 9th and 10th ribs in the left hypochondriac region; Peritoneal cavity contained a large quantity of dark fluid blood mixed up with masses of dark coagula near the hilus of the spleen, which was found lacerated, the splenic vein was also found ruptured. Spleen weighed one pound and thirteen ounces (1 lb. 13 oz.) Substance found disorganised and pulpy. Capsule was thickened. Stomach distended with undigested food. Other viscera comparatively healthy.

Case III.—A male Indian received some blows and died shortly after.—Autopsy about eighteen hours ofter death.—No external signs of violence. On dissection a subcutaneous ecchymosis was found over the 9th rib in the left hypochondriac region. Peritoneal cavity contained a large quantity of dark liquid blood mixed up with dark coagula. Splenic vein near the hilus found ruptured. Spleen, enlarged and disorganised, weighed one pound and ten ounces (1 lb. 10 oz.) Stomach distended with undigested food. Other viscera healthy.

Case IV.—An Indian aged 30, was reported to have received some blows and to have died instantaneously.—Exhumation and autopsy three days after death. The body was in a state of incipient putrefaction, but no external mark of violence could be found. On dissecting the abdominal walls a subcutaneous ecchymotic patch of coagulated blood was found between the 9th 10th, and 11th ribs in the left side; in the peritoneal cavity was found extravasated a large quantity of dark liquid blood mixed up with dark coagula and pieces of spleen; this latter was found enlarged, lacerated and could not be weighed. Stomach empty. Other viscera apparently healthy.

Case V.—An Indian female, aged 30, had been beaten and kicked. She died several hours after, and was buried without coffin.—Exhumation and autopsy three days and a few hours after death.—Incipient putrefaction; the skin was extremely dark, and no appreciable external sign of violence could be detected. On dissecting abdominal parietes a subcutaneous ecchymotic patch of coagulated extravasated blood was found in the *right* hypochondriac region; the peritoneal cavity contained about twenty-four ounces of dark liquid blood mixed up with some dark coagula. Spleen enlarged to about five times its normal size, was found torn near its hilus and its substance was disorganised. Stomach distended with gas and undigested food (rice, chillies and potatoes). Other viscera healthy.

Case VI.—Spontaneous rupture of spleen.—An Indian vagrant prisoner, aged 28 years, was working with a band of prisoners near Fort George causeway. There had been no quarrel or fighting between them, and so far as I was able to ascertain he had not met with any accident or received any blow. Prior to his death he was apparently well and worked like the other prisoners. He sat down for breakfast, and shortly after he expired. Autopsy twenty hours after death. No sign of violence could be detected either on the skin or beneath it. On opening abdomen a large layer of extravasated coagulated blood was found to spring from the seat of the spleen, leaving uncovered the liver, spreading downwards, as an "*éperon*" over the intestines down to the bladder. This coagulated layer of blood invested the great omentum and could be raised up with a pair of forceps; there was also some extravasated liquid blood in the left side of the abdominal cavity, and masses of dark coagula were found near the hilus of the spleen, where a transverse fissure of the organ was found. The spleen weighed one pound, and its capsule was *remarkably thin* and of slate colour and easily torn by the slightest pressure with the finger. The spleen substance was pulpy and jelly-like. The stomach distended with water and undigested food (bread). The other viscera were comparatively healthy, and the left ventricle of the heart was found strongly contracted upon itself and presented the so-called "concentric-hypertrophy." The walls of the said ventricle were easily distended with the fingers.

Case VII.—A creole of Mauritius, aged 21, died several hours after severe fighting (with fists and sticks, &c.)—Autopsy about twelve hours after death.—Rigor mortis well marked. Body in fair condition. Two ecchymotic patches found *externally* over splenic region which corresponded with similar ones subcutaneously and between the 8th, 9th and 10th intercostal spaces on the left side. On opening abdomen, upwards of four bottles of dark fluid blood was found mixed up with masses of dark coagula which extended into the pelvic cavity. The spleen was very much enlarged and disorganised, weighed one pound, three quarters (1 ℔ 12 oz.) Splenic vein near hilus found ruptured. Stomach empty. Other viscera slightly congested, otherwise healthy.

Case VIII.—A male Indian, aged 17, was prostrated by several blows with the clenched fist of a man. He got up, walked few paces, vomited, and died fifteen minutes after the assault.—Autopsy about twelve hours after death.—No appreciable external mark of violence could be detected. Body in fair condition. On dissecting abdominal walls no subcutaneous ecchymosis could be found. Abdomen was found distended and fluctuating, peritoneal cavity contained about four pints of dark liquid blood with dark coagula. Spleen enlarged and weighed 14 oz. Was ruptured near its hilus. The splenic vein at the same spot was also found ruptured; the capsule was extremely thin. Stomach distended with undigested food. Other viscera were healthy.

Case IX.—A creole of Mauritius aged 34, being drunk was found fighting with another man, after several blows he fell down with a scream and died shortly afterwards.—Autopsy twenty hours after death.—Two well marked ecchymotic patches, were found externally over splenic region; there was also found a subcutaneous ecchymotic patch between the 8th and 9th rib in the left side, the peritoneal cavity contained a large quantity of dark liquid and coagulated blood; the spleen was found very much enlarged and surrounded by masses of dark coagula; it presented two fissures near the hilus, and the splenic vein was also found ruptured. Spleen weighed two pounds and one fourth of an ounce (2 lbs. ¼ oz.) Liver enlarged. Nutmeg in appearance. Stomach empty. Other viscera slightly congested.

Case X.—A male Indian aged 39, was reported to have died after receiving some blows.—Autopsy thirty six hours after death. Rigor mortis was still present. No external mark of violence could be seen. On dissecting abdominal walls; a subcutaneous ecchymotic patch was found within the muscular fibres of the external oblique muscle on the left side ; the peritoneal cavity was distended with dark liquid and coagulated blood; the spleen was found surrounded by masses of coagula, was very much enlarged, disorganised and reduced to a pulpy mass; was removed piece-meal and could not be weighed. Stomach distended with undigested food. Other viscera presented nothing particular beyond slight incipient putrefaction.

Case XI.—Male Indian aged 36 years, was reported to have received some blows on the left side from a Chinaman, and to have died twenty minutes after. Autopsy 20 hours after death. Rigor mortis well marked. Body in fair condition. No external marks of violence could be detected; on dissection no subcutaneous ecchymosis to be found; large quantity of dark liquid and coagulated blood in the peritoneal cavity; spleen enlarged and surrounded by dark coagula near its hilus, where two distinct fissures (transverse) of the spleen were found; the spleen substance was softened, and the whole organ weighed one pound and eleven ounces (1 lb. 11 oz.); its capsule was remarkably thin. Stomach empty. Other viscera healthy.

Case XII.—A female Indian aged 38 years, married, in fair condition, had a hearty meal shortly before she was struck in the pit of the stomach with the clenched fist. Death a few minutes after.—Autopsy seven hours after death. No external mark of violence to be seen. On dissection, a subcutaneous ecchymotic patch was found near the 9th rib on the left side. Abdomen distended and fluctuating; peritoneal cavity contained a large quantity of dark liquid and coagulated blood; the spleen was imbedded in coagulated blood and weighed twelve ounces (12 oz.); its capsule was remarkably thin, and the organ was found ruptured transversely near its hilus. Stomach distended with undigested food. Other viscera including uterus were normal and healthy.

Case XIII.—A male Indian aged 36 years was sitting down for breakfast when he was violently assaulted by another Indian; he received some blows with the clenched fists and several kicks in the left side, he rolled over, and died whilst being carried to Hospital.—Autopsy eighteen hours after death. Body well nourished and in fair condition. No external marks of violence could be detected. On dissection a subcutaneous ecchymotic patch was found between the 8th and 9th ribs on the left side. Peritoneal cavity was distended with a large quantity of dark liquid and coagulated blood. The spleen was surrounded by dark coagula and weighed a little more than one pound (1 lb.), its substance was lacerated near the hilus, and was found softened and reduced to a jelly-like mass. Its capsule was remarkably thin. Stomach moderately distended with undigested food. Other viscera were found bleached.

Case XIV.—A male Indian aged 28 years, a night watchman, received several direct blows upon the abdomen, and was afterwards found dead.—Autopsy 14 hours after death. Rigor mortis well marked. Body in fair condition. External signs of violence seen in right hypochondriac region posteriorly. On dissection a subcutaneous ecchymotic patch was found over splenic region. Peritoneal cavity distended with large quantity of dark liquid and coagulated blood. Spleen surrounded by dark coagula. Very much enlarged and weighed one pound and a few ounces; was found ruptured transversely on its convex surface; there was also a second rupture near its hilus. Its capsule was very thin. Stomach distended with undigested food (rum and claret). Nothing particular about other organs.

Case XV.—A female Indian, aged 24 years, whilst alone in her room, was murderously assaulted by her paramour who was armed with a sharp pointed knife; she received several dangerous wounds about the neck, back, abdomen and buttocks; she fought desperately for her life and was running away when she received in the yard the last blow, namely, a stab-wound on the posterior surface of the thorax, below the inferior angle of the left scapula, which was afterwards found to have penetrated though the thoracic cavity, wounding the diaphragm, the upper and convex surface of the spleen. She, nevertheless, ran into the street for assistance, and was afterwards carried to Hospital. More or less exhausted from loss of blood, but perfectly conscious, she spoke and answered questions. Shortly before her death she vomited clotted blood, got cold, collapsed and died 6½ hours after having been stabbed.—Autopsy. Body in fine condition and presented numberless marks of contusion and wounds, as above described. The two most dangerous and mortal wounds were: 1o. A stab wound in the left hypochondriac region, corresponding to the intercostal space between the 9th and 10th ribs, which penetrated through the peritoneal cavity and the anterior surface of the stomach near the great *cul de sac;* the stomach contained some coagulated extravasated blood mixed up with food; 2o. A stab wound of the thorax posteriorly (already mentioned) which penetrated at the inferior angle of the left scapula between the 8th and 9th ribs, wounding the diaphragm and ending in the upper and outer surface of the spleen; this wound measured one inch, the spleen was about double its normal size, and was not infiltrated with blood. The left lung was pushed upwards, not wounded and healthy; there was no extravasation of a blood in the left thoraxic cavity, whilst the peritoneal cavity was distended with large quantity of dark liquid and coagulated blood, the result of the wounds of the stomach, spleen and great omentum. Other viscera including the uterus were perfectly healthy.

TYPHOID FEVER

BY THE EDITOR

A case of typhoid fever occurred during the month of March in the Military Hospital. On examination *post mortem*, the lesions characteristic of the disease were found to be well marked.

Shortly after this several cases of fever were admitted which presented the typhoid type, lasted for about three weeks, and did not yield to quinine. These we believe to have been also cases of enteric fever. The following are the notes, in a very condensed form, of one of these cases, furnished by Dr Moorhead, through whose kindness we were allowed to watch the progress of the case.

Garra, a gunner belonging to the Royal Artillery was admitted into the Hospital on the 20th April, having fell unwell for three days before his admission. On the 19th (the day previous to his admission) he had rigors and headache.

When first seen on the 20th he was feverish, skin moist, tongue coated, bowels confined. Was ordered a purgative and quinine.

On the 24th it was noted that he had passed a restless, sleepless night, with a temperature of 102° F. on the previous evening, at which point it also stood when examined at 7 o'clock A.M. His pulse was 96; and he further complained of abdominal pain, to relieve which fomentations were ordered, and the quinine continued.

From this date up to the 30th, the evening temperature was generally 105° F., sometimes 104°; the morning two degrees lower. His tongue had got dry and black, his motions frequent, watery, and generally dark brown in colour. He was prostrated restless, and sleepless; complained of abdominal tenderness, and exhibited doubtful rose coloured spots. Liver and spleen tender, no marked enlargement of either. The quinine treatment, with occasional doses of Dover's power and cinchona and ammonia, had been continued.

Considering the range of temperature, the persistence of abdominal pain, the diarrhœa, the resistance of the disease to quinine in efficient doses, it was now concluded to be typhoid fever, although there was some doubt as to the genuiness of the rose coloured eruption. The quinine was therefore stopped and the patient put upon Willebrand's mixture of iodine and iodide of potassium. (*See Niemeyer)*.

For the next three days, although the patient stated that he felt better, no marked improvement in the symptoms could be observed. On the 3rd May, however, the morning temperature was 103° F. and the evening only 102° F. He was still sleepless, and the diarrhœa continued. On the 5th he had an attack of epistaxis; his bowels were opened four times during the night, and his temperature was again 103° F. in the morning, falling to 102° in the evening: the pulse on both occasions being 100. On the morning of the 7th the patient seemed better and the temperature was 100° rising at night to 103°. On the 8th the morning temperature fell to 98° F. rising at night to 101°. The diarrhœa had now abated, and the patient was decidedly better. From this time the temperature in the morning was generally about 98° F. and in the evening sometimes as high as 104° F. On the 11th, he was again ordered quinine, along with digitalis, although the iodine mixture was continued. The patient gradually improved and on the 11th was convalescent. He afterwards suffered a slight relapse but finally recovered perfectly.

It is evident that the above is not a case of simple remittent fever. There may be some doubts, of course, as to whether it was true enteric fever, but it is certain that it was not the ordinary malarial fever of a continued type. The fact that the temperature fell on the twenty first day, after following pretty nearly the range of typhoid fever, along with the abdominal symptoms, and the general condition of the patient makes it probable that it was a true case of enteric fever.

As already stated, the fever did not yield to quinine, although given a high doses. An improvement took place under the use of iodine and iodide of potassium, which our own experience leads us to believe, is one of the most useful combinations in this fever.

The liver and spleen were deeply congested, and between the layers of the omentum and mesentery were a great many dark clots. The large and small intestines were healthy. The kidneys were manifestly diseased. They were *very much enlarged* and *exceedingly soft.* Under the thickened capsule, which could be removed easily, a great many dark punctiform ecchymoses, were also observed. The medullary and cortical substances of these organs could scarcely be distinguished from each other on account of the deep livid injection of the whole. According to the lesions observed the man had evidently suffered from Bright's disease of which the cardial hypertrophy was the consequence. The mode of death was no doubt asphyxia. This observation confirms the statement of Casper that no medical jurist should base his diagnosis and his opinion *merely* on the occurrence of these petechiæ-like ecchymoses.

ON A VARIETY OF STOMATITIS DUE TO BAD SALT FISH.

D^r G. E. PELLEREAU,

Medical Officer of Police and Prisons.

An epidemic of stomatitis lately broke out in a Public Institution, which was produced by the use of bad salt fish. The disease being interesting in a scientific point of view, it is thought advisable to publish in this number a short account of its symptoms, which somewhat differ from those of ordinary stomatitis.

They were as follows :—The lining membrane of the whole mouth and throat was of a deep pink, or deep red color. In certain parts it was more marked than in others, as for instance, on the tip and edges of tongue, the internal surface of the lower lip and the tonsils. In some cases this color was diffuse, in others in disseminated patches. There was no distinct swelling of the mucous membrane, but its papillœ were hypertrophied, and sometimes the congestion was so intense that red punctiform ecchymoses were observed here and there. No ulcerations were to be seen, but more or less profuse salivation accompanied with a burning pain increased by the passage of food. No fetor of the breath, and no engagement of the cervical and submaxillary glands existed. The mouth, tested with litmus paper frequently in the day, gave a slightly acid reaction. The saliva examined microscopically presented nothing remarkable, except in one case where spores and mycelium of fungi could be clearly detected. No complications about stomach or intestines.

The salt fish which had given rise to the disease was carefully examined and found by the naked eye to be covered with mould. The microscope revealed in each muscular fibre millions of spores and myceliums.

As soon as the supply of the deteriorated salt fish was stopped and the patients put on milk diet, the disease rapidly subsided.

ON THE PHYSIOLOGICAL AND THERAPEUTICAL PROPERTIES OF QUINETUM.

G. E. PELLEREAU

Medical Officer of Police and Prisons

As the vast cinchona forests of South America are gradually decreasing, and as the usual supply of sulphate of quinine has of late remarkably diminished in the market, it is, we believe, of great importance to those who live in malarial regions to know whether there is any substitute for the above mentioned alkaloid in case it should happen one day to be wanting. With this view, various drugs have been proposed and tried by different observers such as tannin, cinchonidine &c. &c. and their efficacy has, up to the present time, seemed rather questionable. The general opinion to which the majority of practitioners have come to is that, in common cases of *malarial* fever, their administration has been attended with the best results, but that in pernicious and sudden forms of the disease, where speedy action is absolutely necessary, no one would ever think of having recourse to any thing else if quinine were at hand. As soon as the mixed alkaloids derived from the recent plantations of India, were introduced into Mauritius, all the medical men of the place thought it their duty to submit the new drug to a careful and elaborate experimentation. It has not hitherto, we must confess, been very much resorted to in private practice, but as it has been, and is still, used on a very large scale in the wards of the Civil Hospital of Port Louis, we are enabled to state, in a few pages, its clinical and therapeutical properties and give an appreciation of its value as a substitute for quinine.

Sulphate of quinetum, the preparation we used, was in most of our cases administered in solution by the stomach, this mode being found to be more advantageous and generally attended with better results. It was given in high doses, 20 grains every 4 hours, day and night, smaller doses having positively been found, by experience insufficient and devoid of any influence over the course of our fever. It is less bitter than quinine, and does not produce much nausea and vomiting. Unlike quinine it scarcely has any effect on the sense of hearing and, of the cases that were under our care, very few complained of deafness and ringing on the ears. When the latter was present it was even then observed to be much less than that produced by quinine. The cutaneous and nervous systems were differently affected by it, and the cold sweats and tremor, so common after the administration of quinine were never to be seen. The circulation was reduced, and the pulse became normal, but never so low as if quinine had been used, for in not a single case did we observe the remarkably slow and very depressible pulse noticed after large doses of the latter have been absorbed. Its action on the temperature is shown by the following two cases :—

CASE I

Malarial Fever.—Remittent Type

Thomas L.—Lately come to Mauritius; has never lived in a malarious country; has always enjoyed good health. Suffered from malarial fever for the first time on the 8th of April last, when he was taken ill with rigors, vomiting and diarrhœa. This, soon passed off. On the 11th of April, being again taken ill, he was admitted into the wards of the Civil Hospital with the following symptoms: headache and giddiness, face flushed, skin burning hot. Tongue red and dry. No vomiting. No diarrhœa. Heart and lungs healthy. No enlargement of liver and spleen. Urine scanty and high colored containing no albumen or sugar. Distinct increase of leucocytes in blood. Twenty grains of quinetum were prescribed every four hours.

As is shown in the diagram, the temperature which was nearly at 40 ° C came down to 38 ° in the evening of the day, kept at this point, for a few days, marked on the 16th nearly 36 ° and fluctuated afterwards between 36 ° and 37 °.

CASE II

Malarial Fever.—Intermittent Type

Ramahery, a native of Madagascar, has been in Mauritius for the last five months. In that interval, he has been several times admitted into the wards of the Civil Hospital for malarial fever. Admitted last on the 26th of May, in the evening, with the following symptoms : sudden rigors which lasted about half an hour, and were followed with profuse perspiration. Severe headache, and pain in loins. Tongue covered with a white moist fur. No vomiting or diarrhœa. No organic lesions. Urine scanty, containing no albumen or sugar.

Twenty grains of quinetum were given every four hours.

The diagram shows that the temperature on the third day fell down to 37 ° and kept afterwards between 36 and 37 °.

These two cases clearly prove that quinetum, with regard to its effects on the temperature, is not unlike quinine. After the administration of the drug in high doses, the thermometer, whatever degree it has reached, falls down at the end of the fever to normal—or below normal. But even here there is still a difference between the two, the fall being, after quinine, very frequently more marked going even below 36 ° which has never been found to be the case with quinetum.

Quinetum, therefore, seems to possess the same physiological and therapeutical properties as quinine, though in a lesser degree. The latter is no doubt superior to it in all respects, especially in its power of checking the various manifestations of malaria. It is so superior to it that in what are termed pernicious fits, i. e. in the worst forms of the disease, where it is of importance to bring the patient rapidly under the power of the medicine, the practitioner will always prefer quinine. The following case can be quoted in favor of this opinion, as it illustrates the successful administration of quinine after the mixed alkaloids had positively failed. Besides, it shows most clearly the action of quinine in melanuric fever, in opposition to the erroneous theory which of late has prevailed among practitioners of this island.

Case of Melanuric Fever showing the superiority of Quinine over Quinetum.

J. R., Policeman, has suffered much from malarial fever but has never had this form of the disease before. Had fever for a fortnight before his admission. His state on the 14th of May 1878 was as follows : skin burning hot, well marked jaundice. Intense pain in temples, eyes, loins, and pit of stomach. Tongue covered with a thick yellow fur. No vomiting or diarrhœa. Heart and lungs apparently healthy. Liver and spleen not enlarged although tender on pressure. Urine of a dark yellow color and containing no albumen or sugar.

Ipecacuanha followed by twenty grains of quinetum every 4 hours.

16th May. Jaundice deeper. Purgative on same day at 8 A.M. Patient was taken with rigors and at 10 A.M. he passed dark urine not unlike stout.

17th May. At 8.30 A.M. rigors, and two hours afterwards dark urine again.—It must be mentioned that in the interval between the rigors—the urine used to retain the same character, although not so dark as after the rigors.

18th & 19th May. Same as on the preceding days.

20th May. Quinetum producing no effect at all. It was stopped and quinine given instead. Forty grains of the latter were given in one single dose early in the morning. The rigors, on that day, did not come at 8 A.M. as before, but at 2 P.M. They were delayed by six hours, which sometimes is a very important sign in the treatment of malaria. After the administration of quinine, the urine gradually became less high till it become completely normal in colour.

21st of May. Rigors at 2 P.M. Twenty grains of quinine twice a day, this dose being continued till convalescence. In the morning of that day, as will be seen in the diagram, the temperature, which had been before about 38 ° C, and had not been influenced by quinine for the first time came down to 37.4. but in the evening went up again to 39 ° 4

22nd of May—Rigors at 2 p.m. The temperature kept at about 39 ° It has never been so high from the beginning of the disease.

23rd of May—Rigors again at 2 p.m. but in the morning the temperature fell rapidly down to 37 °

24th of May—Slight rigors at 10 a.m. The temperature began to rise again.

25th of May—No rigors. Temperature again at 39 °

26th of May—No rigors. Temperature fell down to 37 ° and has continued normal since.

The superiority of quinine over quinetum is most plainly shown by the change that rapidly took place in the range of temperature and in the state of the urine, after quinetum had proved unsuccessful. With regard to this case, it must be noticed 1o that 40 grains of quinine only were given daily and substituted for 120 grains of quinetum; 2o That as soon as quinine was administered, the temperature increased and went up to 39 ° which it never reached before.

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TRAITÉ DE LA LYMPHANGITE ENDÉMIQUE DES PAYS CHAUDS

PAR LE DOCTEUR MAZAÉ AZEMA

A REVIEW BY Dr PELLEREAU

Diseases of the Lymphatic system form, in hot climates, a numerous class of diseases the pathology of which is as yet very little known. Together with malaria, they can be considered as two distinct and important groups, independent of each other and standing foremost in the long list of affections which daily present themselves to the medical practitioner. As very few authors have published observations on them, and as also up to the present time their pathogeny is rather obscure, and for a very long time perhaps will be so, every work that tends to throw light on such an interesting subject will be welcomed with the utmost gratitude by the medical profession. We therefore call the attention of the public and of our colonial colleagues to a recent treatise on the "Lymphangite endémique des pays chauds" by Dr Mazaé Azéma, an eminent practitioner of Reunion.

The first fasciculus only has hitherto been published. It begins with an historical sketch, and the enumeration of the few authors who have written on the matter. Then comes the true scientific part of the work, the anatomy of the lymphatic system, which is divided by the author into 1o Lymphatic plexus or reticulum, being the origin of the lymphatic vessels, situated in the cellular tissue and found in the following places, viz : under the skin, in the middle line of head and face, on each side of nose, on ears, around mouth, nostrils, vulva and anus, under scrotum, on the breast, on each side of the thorax and on the posterior aspect of the thoracic and abdominal limbs, and especially on the palmar and plantar aspect.

2o. Lymphatic vessels which are exceedingly numerous and predominate in the extremities, breasts, and scrotum.

3o. Ganglions.

Dr M. Azéma afterwards carefully investigates the various causes of the " lymphangite endémique " and divides them into

redisposing and determining or occasional. As the chapter on the predisposing causes is very interesting, and seems to us to have a great scientific importance, we publish it in full.

CAUSES PRÉDISPOSANTES

Une excursion dans le domaine de l'hygiène des pays chauds est le prélude nécessaire aux considérations étiologiques que notre sujet impose. Nous l'esquisserons à grands traits.

L'observateur qui veut assister aux mutations premières, qu'amène au sein de l'organisme l'influence des régions tropicales, ne doit pas choisir le créole pour sujet de ses investigations. Ici le terrain a été en quelque sorte préparé par les générations antérieures. Aux prises avec des climats nouveaux et météorologiquement opposés à ceux qu'elles ont quittés, ces générations ont eu à subir le conflit, parfois lent, souvent brusque, qui prépare et amène la mise en harmonie de l'organisme avec les modificateurs physiques. Leurs descendants bénéficient de cet équilibre harmonique et l'hérédité leur crée une constitution particulière, suffisamment adaptée au milieu où se poursuit l'exercice complet et régulier des fonctions physiologiques. Chez le créole, les luttes de ces fonctions contre la climature sont lourdes ; les aberrations en sont peu apparentes ; et ce n'est que lorsqu'elles sont poussées au point de créer quelques-unes des endémies qui lui sont spéciales, qu'elles viennent révéler l'empire qu'exercent sur lui les modificateurs thermiques auxquels il est soumis.

Pour en avoir une image saisissante, il faudrait rechercher et analyser les phénomènes qu'ils provoquent au sein des générations qui ont les premières ressenti l'action du climat nouveau. Cette recherche serait vaine. Mais on peut y suppléer, en dirigeant cet examen sur l'Européen transplanté dans les régions équatoriales et exposé par un séjour prolongé à leur dévorante ardeur.

Personne mieux que Fonssagrives, dans son *Traité d'hygiène navale,* n'en a résumé les résultats. Ils peuvent être, suivant leur ordre de succession, ramenés aux chefs suivants :

1o. Elévation de la température organique du corps ;

2o. Ralentissement de la circulation et de la respiration ;

3o. Dilatation des fluides et des solides de l'économie ;

4o. Enervement des fonctions digestives ;

5o. Rupture d'équilibre des sécrétions par la prépondérance de la sueur sur toutes les autres ;

6o. Engorgement des viscères de l'abdomen;

7o. Etat anémique du sang;

8o. Nous ajoutons, comme conséquence de cet état : prédominance marquée des fonctions du système lympatique.

Dans cet ensemble de modifications organiques, deux faits dominent la scène et deviennent, pour ainsi dire, les deux axes autour desquels se déroule la chaîne des événements physiologiques et pathologiques qui caractérisent la période d'*indigénisation*. Le premier fait est la localisation des troubles dans la région abdominale; le second, les vices de proportionnalité qui surviennent dans les éléments du sang.

Nous nous écarterions de notre sujet en nous appesantissant outre mesure sur les phénomènes du premier ordre. Nous rappellerons seulement, à leur propos, avec quelle déplorable fréquence la période d'acclimatement est traversée par ces embarras gastriques, par ces flux bilieux, qui sont comme une sorte de révolte des organes digestifs contre les surprises de sécrétion de l'estomac et du foie. Nous rappellerons encore ces gastralgies capricieuses, ces interminables dyspepsies auxquelles le séjour des pays chauds condamne l'Européen, nouvellement arrivé. Nous ferons enfin remarquer la double résultante pathologique de ces désordres divers, l'hépatite avec ses fréquentes solutions purulentes et la dyssenterie avec ses rebelles lésions ulcéreuses, pour faire comprendre et accepter la part active, prépondérante que prennent les viscères de l'abdomen aux perturbations que développe l'influence tropicale. Elle se résume, en dernière analyse, en une torpeur progressive des fonctions digestives et en une tendance continue à l'engorgement du foie, de la rate et du mésentère. Mais ce qu'il est important de noter ici, c'est le trouble profond qui en résulte pour la nutrition et pour l'élaboration du sang, trouble auquel il est permis de rapporter en partie les causes de l'anémie tropicale.

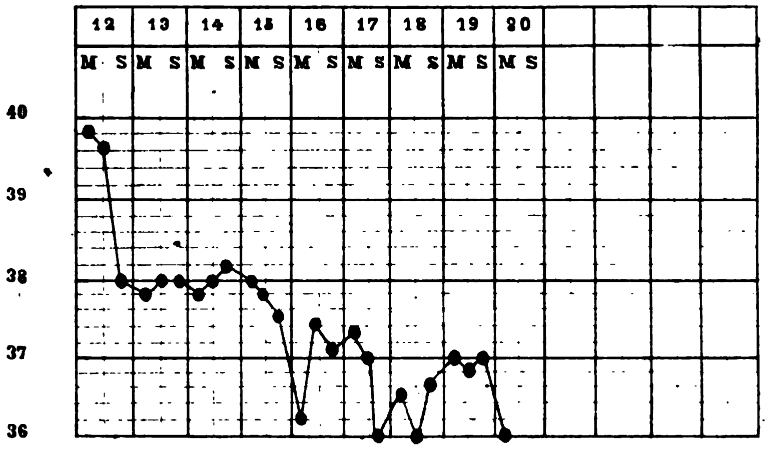
Cette anémie, dont les caractères chimiques n'ont pas encore été précisés par des essais analytiques, et qui semble constituée par une augmentation proportionnelle du sérum sur les éléments solides du sang et par la diminution des globules rouges, est un fait généralement constaté dans les pays chauds. Elle devient même une nécessité physiologique de la période d'acclimatement et du séjour dans ces régions. Car l'Européen n'y conserverait pas impunément ce sang épais, fibrineux, nécessaire à la chlylification et à l'hématose propres aux pays froids. Il serait bien vite exposé à des luttes qui, violentes,

[illegible]

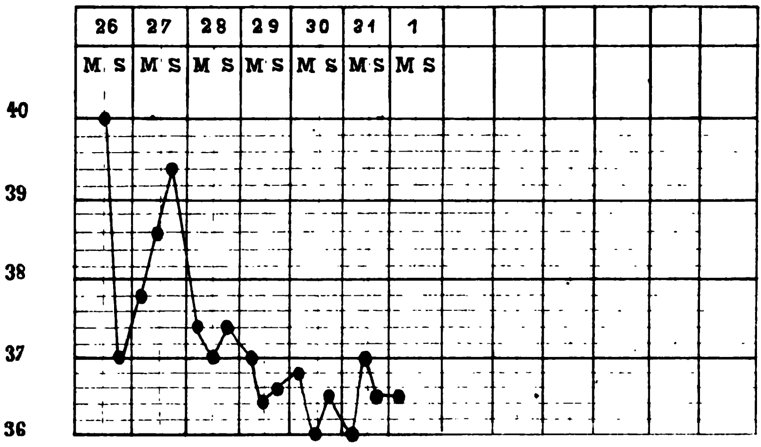
[illegible] nerveuses et qui, en [illegible] le travail des autres, [illegible] les mêmes conditions [illegible] En un mot, il faut que [illegible] et lymphatique" [illegible] à sa part.

[illegible]

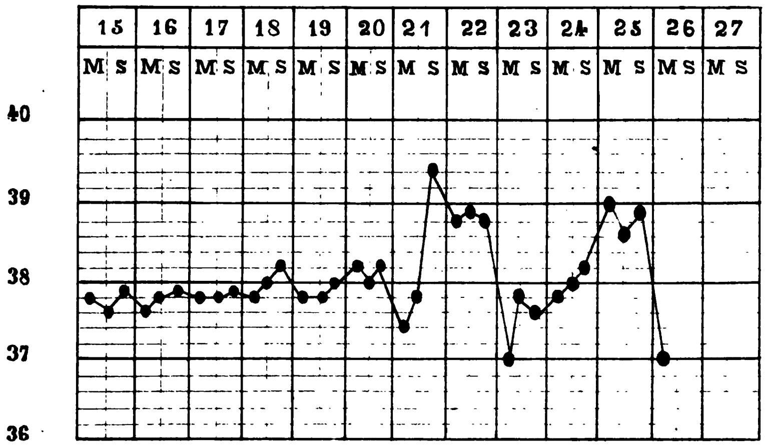
Case of Malarial Fever. - Remittent type.
Thomas L.



Case of Malarial Fever.-Intermittent type.
Ramchery.



Case of Melanuric Fever.-J.R.



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CLINICAL WORK

A QUARTERLY JOURNAL

OF

THERAPEUTICS AND PUBLIC HEALTH

Edited by

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CLINICAL WORK

OCTOBER 1878

ANNUAL REPORTS
OF THE REGISTRAR-GENERAL ON BIRTHS, MARRIAGES AND DEATHS IN MAURITIUS
(1872-1877)

REVIEW BY THE EDITOR

These reports, as their purpose demands and as their title suggests, are distinctly of a statistical character. A single glance at the solid folio now before us, bristling with figures, makes it evident that these reports will only be consulted by those engaged in special studies connected with vital statistics. Interesting, in the ordinary sense of the word, to the general public, such publications can never be; and to the author, such a compilation must be a drudgery something like the drawing up of a table of logarithms, or making the calculations for a ready reckoner. Pleasure in his work—excepting such as every right thinking man experiences from the sense of duty performed—the compiler of such returns cannot have; but we can fancy the feelings of satisfaction and the sense of relief which the statistician feels as he revises his last "copy" and send it off to the printer. His task, however useful it may be, is a thankless one. Not one in a thousand of his fellow-citizens ever sees the report which has cost him many a weary hour to prepare, and those who have occasion to look into it are more ready to grumble over real or supposed deficiencies and inaccuracies, than to consider the trouble and labour that its production involves.

It is not, then, in a hypercritical spirit that we draw the attention of our readers to these reports. They contain much valuable information; they are evidently edited with care, and many of their deficiencies are in no wise to be laid at the door of the Registrar-General, from whose office they are issued. We feel it our duty, however, to point out some of the defects we allude to, and also to suggest the means by which these returns may be rendered more useful to those for whom they are intended.

What, we ask, is the end to be attained, the purpose to be served, by an annual report of this nature? In order to answer this question, we must remind our readers that the duties of the Registrar-General of to-day are very different from those of the Officer of the Civil Status in comparatively recent times, and also very different from those of the local Registrars in England before the recent registration acts came in force. The primary object of registration, as every body knows, had reference simply to questions of succession, inheritance, social position and legal rights,—in fact the object of registration was entirely legal, and had in view of settling questions connected with the Civil Status of individuals. It was, as we say, entirely *legal*, and we might add *local* and *individual*. A man is accused of having committed bigamy, it is necessary for the prosecutor to obtain proof of a previous marriage. An outrage has been committed upon a child under age, the act of birth becomes an important piece of evidence. A question of succession arises, it is necessary to prove the relationships of the claimants to the former possessor. Every civilized state recognises the importance of a complete and perfect system of registration of births, deaths and marriages, and in every society the means of attaining this object are provided for. Yet to accomplish all this there is no need of annual reports. Every legal purpose is served by reference to the registers, and no legal object can be served by publishing such statistics.

The truth is, that the registration system has, to use the popular phrase of the day, undergone 'a development'; and this has been effected chiefly through the untiring exertions of Dr Farr of London. In the year 1837 he directed attention to the importance of vital statistics in an article on that subject which appeared in McCullock's "*Statistics of the British Empire.*" In the same year the registration of all deaths and of the causes of death was commenced. The reasons which led to this important step were chiefly, no doubt, the prevention and detection of crime. Before this a poor man might be secretly poisoned and quietly buried, without any one being the wiser. It was found necessary, therefore, to insist upon having the cause of death duly certified. For this, the co-operation of the medical profession, of course, was indispensable, and the law has consequently imposed the duty of certifying the cause of death upon the medical man who was last in attendance. This, then, was the *primary* object in insisting upon the medical certification of the cause of death, viz., to obtain a guarantee that the person to be buried died from *natural causes*. This being proved, the legal requirements were satisfied. What particular disease the person had died of, was to the magistrate a question of not the slightest moment, so long as he was assured that he had not been put out of the way. But now, to the primary object, another and a most important one became superadded. It was seen by Dr Farr that complete and accurate information regarding the causes of mortality might be of vast importance to the community at large and of great interest and value to the physician. For this purpose, however, it was not sufficient to enquire whether or not a man had died from natural causes; the exact disease that proved fatal had to be ascertained. This was accomplished by the aid of the medical profession, without whose assistance no registration scheme could be carried out. The registration of the causes of death in the various cities and districts was turned to account in a marvellous manner in elucidating the causes of disease; in detecting the first appearance, and in tracking the march of epidemics; in discovering the effects of different noxious agencies upon society; in determining the efficacy of sanitary improvements upon the public health, and in many other ways, throwing light upon subjects which may collectively be named vital science. This important work has grown in importance from year to year, and will ultimately be of the utmost service to the State. It was soon found out that in relation to registration, the science of nosology or the classification of diseases—a science which had been almost forgotten—had to be resuscitated into practical life. It was clear that no reliable information could be obtained as to diseases, if every body followed a nomenclature and classification of his own. Thus, one might register death as being due to mucous fever or gastric fever, while in reality he was meaning the disease now known as typhoid or enteric fever. From statistics so formed no conclusions could be drawn. To obviate this difficulty, the London College of Physicians prepared a classification of diseases, and a copy was given, we believe gratuitously, to every practitioner in England, Scotland and Ireland. This classification is not perfect. Those who prepared it do not claim for it that it is scientific; but it is practical in a high degree and suitable for the purpose for which it was intended.

When this development took place—and it did so gradually—the Registrar ceased to be entirely an Officer of the *Civil* Status. He became also the Officer of the *Vital* Status, and for this reason amongst others, as a rule, the post should be occupied by a Medical man; or, *what amounts to the same thing,* he ought to have the services of a Medical man at his disposal.

As an Officer of the *Civil* Status it is entirely superfluous for the Registrar General to publish reports. All that is necessary is that he should keep the records correctly for reference as occasion may require. As an Officer of the *Vital* Status, reports from him are necessary, and nowhere more necessary than here in Mauritius. We want to know many things that can be learned only from such reports. We wish, for example, to know the mortality and the causes of death in the larger villages, in order to compare the same with those in the camps and country. We want to know the mortality along the basins of some of our rivers—Grand River, for example. We want the means of ascertaining to what extent insanitary causes contribute to swell the annual mortality from fever, and to what degree sanitary improvements reduce its virulence. We wish to know in how many of the cases registered as dying from pneumonia, dysentery or pleurisy the fatal disease was really the result of malarial intoxication. We want to know accurately the number of persons who die of leprosy annually. We wish to know very many things beyond the exact numerical amount of the still-births—a number sufficient to stagger any ordinary statistician. We wish, in short, to be put in possession of means that will enable us to investigate the causes of the diseases from which the community suffers. Such a work is surely an important one.

No one will more readily admit or sincerely deplore the deficiencies of these reports than our present able Registrar-General. For the purpose of portraying faithfully the various and ever varying vital conditions of the community the system of registration, as at present conducted, is not only imperfect, but we may safely say, entirely inadequate and almost worthless. For this purpose it is essential that the statistics be complete and correct,—that the nomenclature adopted be uniform,—that conciseness and method in arrangement be observed,—and, further that the country be subdivided, for registration purposes, into districts with some reference to the conditions of life of the people. Now, respecting *completeness,* we have little to say. We may take for granted that most deaths are registered. In this respect, the system, so far as we know, is sufficiently perfect. But how can *correctness* be insured when, as we learn from the report for 1877, only eleven per cent of the deaths occurring outside public Institutions were certified medically? The Registrar-General, referring to this, states as follows:—

"Only 2,479 certificates of causes of death were received in the course of 1877, of which 1,293 were of deaths in Public Institutions, and 198 of violent and accidental deaths, &c. Of the remaining 8,841 deaths only 985 or 11.1 per cent were medically certified to.

"I brought this question to the notice of His Excellency the Governor in September last, and recommended, as is the case in the United Kingdom, that it should be made obligatory on medical practitioners, under penalty, to furnish this department with certificates of the causes of death of all their patients. It is only from such certificates that we will ever be able to prepare correct statistics. An Ordinance to that effect is, I believe, in course of preparation."

Now, there can be no doubt that it should be made compulsory on medical men to furnish the Registrar-General with the causes of death in all cases attended by them. A demand so reasonable in itself, so advantageous to the community in general, so essential to the interests of the medical profession, should be readily acceded to by every practitioner. But something more than this is evidently required, inasmuch as only a fraction of those who die receive any medical help. What is to be done in those cases—and they are really the great majority—which had no medical attendance during the last illness? We confess there are difficulties of a serious kind standing in the way of answering this question. The consideration would require more space than is at present at our disposal. We have no hesitation, however, in saying that the certification of *all* deaths ought to be insisted upon, and in some way provided for. Without this, no reports will be of much value; and until this be accomplished, the statistics should represent separately those *certified* and those *uncertified*. Mixing up both together in one mass reduces the whole to hopeless confusion.

Then, as regards *nomenclature*, it is desirable, nay essential, that medical men be each provided with a copy of the authorised classification of diseases, and that in making their returns they should scrupulously adhere to it. We would suggest, however, that a special and more minute classification of malarial fevers should be adopted, as these form a very important cause of mortality in this Colony. Referring to the Table No. 31, entitled 'A statement of the causes of death in the Island of Mauritius during the year ending 31st December 1877, we find the headings connected with fever as follows:—'Enteric Fever, Fever, Malarious Cachexia, Fever Intermittent, Fever Remittent'; and then, as separate pits for unwary nosologists, we have further on:—'Anæmia, General Dropsy, Splenitis, &c.'

Could any arrangement be more unsatisfactory? We all know what enteric fever is; but what is meant by the general term 'Fever' which follows? It is evidently a convenient sort of *limbus* to which may be relegated all febrile diseases the nature of which cannot be found out; and it is well known that the most of the cases registered as *fever* ought to have been entered under the headings of *remittent* or *intermittent*. In page 7 of the same report we find a list of some of the various forms of fever certified medically during the past year. We shall quote it as it stands, taking the liberty in doing so of correcting an evident but ugly typographical mistake:—

The following are the several forms of Malarial Fever medically certified to during 1877:—

Algid	form	
Apoplectic	„	
Choleraic	„	
Convulsive	„	
Dysenteric	„	
Epileptic	„	
Ictero-Hæmorrhagic	„	
Do.	„	with vomito nigro
Intermittent	„	
Pernicious	„	
Pneumonic	„	
Remittent	„	
Syncopal	„	
Typhoid	„	
Typhus	„	
Malarial Cachexia	„	

These are said to be 'the several forms of malarial fever certified medically during the year.' We may be permitted to remark that *Malarial Cachexia* is *not* a form of malarial fever, but a *result* of the malarial poison. And we would like to know how to distinguish the *Typhus* from the *Typhoid* forms of the malady. Then, what is meant here by the term *Pernicious Fever?* Most of the forms mentioned, such as the *Algid, Apoplectic, Choleraic,* are pernicious. This is, therefore, a beautiful specimen of bad classification. Short as the list is, it is long enough to prove (a) that it is high time some definite classification were adopted, and (b) that in these matters our esteemed and able Registrar-General should have the assistance of a professional expert. Uniformity of nomenclature is just as important as completeness and correctness.

Of less moment, it is true, but still very important are conciseness and methodical arrangement. No table should be admitted into such a report until it has, as it were, established its claim to a place. We venture to say that the clearness and usefulness of the report would be enhanced by omitting a number of tables. And here we may say, by way of parenthesis, a single word about the getting up or printing of these reports. We are now looking doubtfully at Tables 17, 18, 19, 20, 21, 22, 23 and 24, giving a statement of deaths in different localities in the four quarters of 1877. After considering whether these might not be pointed to as tables that could be dispensed with, we have left the question undecided; but we are struck by the variety exhibited in the type and arrangement of these tables. It would almost seem as if they had been got up in order to illustrate the different founts at the service of the printer. We think that by the use of small type and by better arrangement these eight pages could easily have been put into one, greatly to the advantage of the reader, who could then more readily compare the data given.

Leaving this, however, we remark that should any one wish to find out the mortality of Roche Bois, or of the Village of Pamplemousses, or of Rose Hill, this information cannot be derived from the report. We note this in order to point out a defect of which we know the Registrar-General is aware, and which we trust may be remedied next census. The registration returns are only of value as they are viewed in relation to the census returns. The census is the basis of all registration statistics. Consequently the census and the registration districts ought to coincide. Now, the census returns have hitherto been made for political districts only. We know, for example, the population of the district of Pamplemousses, the number of Indians, Creoles and Europeans of which the total population is made up, but we know nothing of the population of the village of Pamplemousses, or of any of the other villages in the district. Now, we may lay it down as a fact that no system of registration can prove satisfactory until the census is taken with a view to the registration requirements. Villages containing more than four hundred or five hundred inhabitants ought to be returned separately in the census. The low-lying parts of a district ought, if possible, to be treated separately from the high and cool regions of the same district. One important part of the statistician's work is to present the reader with a short summary of the results of his year's work. In this he ought to point out clearly the districts which have proved to be exceptionally unhealthy, as well as the circumstances connected with the rise and spread of any epidemic malady. He should state the effect of meteorological conditions on public health, so far as this can be ascertained. He should compare the health of the colony with that of former seasons and of other countries. He will have the opportunity of pointing out the diseases incident to particular industries or classes. He ought to be able to connect any special epidemic, such as enteric fever, with its probable cause, and to point out the results of sanitary improvements on the salubrity of the districts affected. He ought religiously to exclude from such summary everything that can readily be gathered from the returns themselves, unless some inference has to be drawn from it. Quotations from medical authors ought to be avoided. Few who read these reports require to be informed as to Dr Tilbury Fox's views on leprosy, or Dr Seaton's opinions on vaccination. We may add that the list of diseases causing death requires revision and orthographical correction.

Taking the reports, however, as they stand, we shall briefly notice a few points of special interest which have attracted our attention—points not only of interest to the medical profession, but to the entire community.

We find the total deaths registered for 1877 numbered 10,335, which gives for the whole island a death-rate of 29.6 per 1000. The death-rate of Port Louis, however, was no less than 41.9 per 1000. In a very useful table (page 6) the Registrar places before us the death-rate of the United Kingdom and that of numerous towns in various parts of the world. The annual death-rate of the United Kingdom was 19.9, that of London 21.9 per thousand. The death-rate of Port Louis is thus more than twice as great as that of the United Kingdom, and *nearly* twice that of London. The mortality of the entire Colony is excessively high, compared to that of most countries or even towns. Out of 32 towns specified in the table to which we allude, only three, viz., Bombay, Madras and Alexandria presented a higher mortality than Port Louis, and in the case of the first two, we may remark that this was owing to exceptional circumstances. Port Louis is thus left to dispute with Alexandria the unenviable pre-eminence in insalubrity. These figures, more eloquent than words, might well impresss the most apathetic community with the importance of sanitary measures. The fact stating it simply is this—*The general mortality of the Colony is fearfully high, and that of Port Louis simply appalling.*

If we turn now to the table stating the causes of death, the fatal word FEVER stares us in the face. Out of the 10,335 deaths, 5,787 *i. e.* 59.9 per cent, were ascribed to fever. In other words, more than one half of the registered mortality was due to one disease, and that disease is fever. We will not be wrong in surmising that the number of deaths directly and indirectly caused by fever is greater than is here represented. Were it not for this miserable scourge, the Colony would, in fact, be healthy. Yet how, contentedly, the patient multitude submits to decimation without more than an occasional sleepy, half articulate, murmur!

We would have been glad to have had particulars shewing the comparative mortality from fever of the various villages and fever haunts throughout the Island. Such information might have thrown some light upon the *local* causes of the disease. As respects the *general* or *climatic* causes, we may be permitted to remark that meteorological conditions deserve to be far more fully recorded in connection with these reports than they have hitherto been. We hope a closer intimacy well spring up between the learned Director of our observatory and the Registrar-General. The bearings of Meteorology upon the public health is as important a subject for scientific investigation as the connection between the rain-fall and the sun-spots. In addition to the study of the ordinary meteorological conditions, the varying heights of the sub-soil water in the different localities ought to be carefully noted and recorded in these returns.

One other point alluded to in these reports claims our attention viz. the supposed increase of leprosy. The following are the Registrar-General's remark's on the point:—" Eighty five deaths were ascribed in 1877 to that dire disease-leprosy—which is unfortunately rapidly increasing in this Colony, as the following statement of deaths from that cause for the last ten years but (too) clearly proves :—

1868	12	1873	51
1869	58	1874	59
1870	43	1875	61
1871	32	1876	81
1872	39	1877	85

We wish the Registrar had cast some light upon the extraordinary fluctuations observable during the first five years.

If these figures are correct, and we have no reason to doubt it or even for supposing that they represent the whole mortality due to leprosy, the disease must be more prevalent in Mauritius than in Norway, India or Palestine.

CASES ILLUSTRATIVE OF *SUFFOCATION*, WITH SOME MEDICO-LEGAL REMARKS

BY D^{r} F. V. POUGNET

Acting Superintendent—Government Lunatic Asylum.

I

CASE I.—*Accidental suffocation by swallowing an onion.—Death within five minutes.*

Amah, an Indian child, aged between three and four months, was playing on the floor with some other children, near some green brèdes (a kind of vegetable) and raw onions. The mother returned shortly after (about five minutes), when she found her baby lying upon its back and dead. There being some suspicions about the case, a judicial autopsy was ordered.

External examination of the body.

Body well made and well nourished. No appreciable external mark of violence could be detected; marked cadaveric lividity posteriorly (the body having lain the whole night on its back); eyelids closed; pupils moderately contracted; no pigmentary deposits or extravasation of any kind in the conjunctivæ; slight discharge of frothy mucus from the nostrils;—tongue slightly protruding between the gums; lips livid; no punctiform redness or ecchymoses about the face or neck. No external mark of violence could be detected about the mouth, nostrils or neck. Anal aperture relaxed, but no sign of violence could be detected. Round the neck was a small leather necklace, *loose* and tied behind (such a necklace as is commonly worn by Indian children.)

Autopsy twenty-one hours after death.

The head was carefully examined; the fontanelles and sutures were found normal; the *scalp* was carefully removed when distinct punctiform ecchymotic spots were found on the vertex of the head within the cellular tissue of the skull; none could be detected within the scalp-tissue. Posteriorly, cadaveric lividity was well marked and easily demonstrated by an incision. The dura mater was normally adherent to the inner surface of the skull; cerebral vessels found distended with dark fluid blood, but no effusion or extravasation of any kind either upon the membranes or within the brain substance. On section, the brain and cerebellum were found healthy. Nothing abnormal about lateral ventricles. Skull at its base was found healthy and no sign of violence could be detected.

The neck was laid open from the inferior margin of the lower jaw to the root of the neck. The skin, subjacent tissues, and muscles were all found perfectly healthy. The larynx was laid open, when a moderate sised raw onion was found *compressing hermetically the epiglottis* and blocking up entirely the upper opening of the larynx. There was some turbid liquid mucus in the back of the pharynx. The mucous membrane of the mouth, pharynx, and trachea was found *pale* and healthy. No redness or infiltration could be detected. The onion weighed 67 grains.

The thorax : Thymus gland, of moderate size, free from ecchymosis. *The lungs anteriorly along their edges and near the roots presented distinct red punctiform sub-pleural ecchymoses ; proved to be due to coagulated blood.* There was no rupture of the superficial air-cells. Lungs of normal size, congested posteriorly and inferiorly, crepitating under the finger. On section, some dark bloody exudation escaped. There were no apoplectic foci. The lungs floated in water before and after sequeezing. The bronchial mucous membrane was found red, but not ecchymosed. There was no ecchymosis upon the upper or under surface of the pericardium or heart, there was a moderate quantity of clear serosity in the pericardium. There was some dark fluid blood in the *left* ventricle of the heart whilst the *right* ventricle and auricle were quite empty ; the heart was otherwise healthy.

The abdomen : No ecchymosis could be detected upon the abdominal organs which were perfectly healthy. The stomach contained some half-curdled milk with a distinct smell of onions. Mucous membrane healthy ; liver slightly congested; spleen small and healthy ; both kidneys were slightly congested ; intestines and bladder healthy ; the latter contained clear urine.

This form of accidental suffocation is not uncommon among children. It also occurs among grown up persons, chiefly drunkards and the insane.

CASE II.—*Accidental suffocation from suicidal wound of the throat. Death after nine hours.*

A male Indian, aged 40 years, after murdering his concubine, attempted suicide by cutting his own throat. He was found upon his face, with the knife firmly clenched in his right hand. He was carried to Hospital and died nine hours after.

External appearance of the body.

Face calm ; pupils dilated equally ; conjunctivæ pale ; some coagulated blood about the nostrils and mouth; jaws firmly contracted; tongue not protruding; hands and feet smeared with coagulated blood. Body in good condition. Some semen-like fluid from the urethra. No signs of involuntary defecation. *Rigor mortis* well marked. The only external mark of violence was the transverse incised wound of the throat to be hereafter described.

Autopsy twenty-six hours after death.

An incised wound, three and a half inches in length, was observed on the anterior part of the neck ; the wound ran transversely between the thyroid and cricoid cartilages, a little above the thyroid gland. The edges of the wound were clean and even. The following parts were found partially cut, viz.: the anterior part of the windpipe, whilst its posterior part was found entire. On the same level with the wound above noted, and towards its right side was the external jugular vein also partly cut ; so that the blood coming from the right external jugular vein poured itself into the interior of the trachea, which anteriorly was gaping. On pressing upon the trachea, from below upwards, dark liquid blood escaped from the wound; and whilst pressure was applied from below upwards on the right side of the neck, blood could be made to run into the trachea from the wounded vein. *Laterally*, the skin and cellular tissue alone were found cut; the carotid arteries, internal jugular veins, nerves and muscles were found perfectly entire. *Posteriorly*, in the cellular tissue, between the trachea and œsophagus, there was found a small patch of coagulated blood; but the œsophagus and the ligaments of the vertebræ were untouched; the thyroid gland small but healthy and entire. Trachea and pharynx were laid open and examined, no foreign body or coagula were detected. The mucous membrane was red and ecchymosed.

Scalp pale, no punctiform ecchymoses within cellular tissue on the vertex of the head. Skull presented no sign of violence. No extravasation of any kind either upon or within the meshes of the pia mater. Cerebral vessels empty. Brain pale.

Lungs were pushed upwards by the distended abdomen and filled entirely the thoracic cavity. They were slightly adherent laterally, but the adhesions were of old standing. Anteriorly and superiorly the lungs were pale, *but studded with red punctiform sub-pleural ecchymotic dots, which were distinct and rounded, but in some places formed patches.* They were more numerous along the edges and the roots of the bronchi and pulmonary bloodvessels. Posteriorly the lungs were found congested, but no sub-pleural ecchymosis could be detected. On being squeezed, dark fluid blood oozed out from the bronchial tubes; the same thing was noted on section, but no apoplectic foci could be detected, nor was there any layer of coagulated blood to be observed on the surface of the lungs. The blood seemed to have penetrated almost all the air cells. *The bronchial mucous membrane was found of a bright red color, literally infiltrated with blood.* No extravasation of any kind in the thoracic cavity. No ecchymoses upon or at the under surface of the pericardium, and none upon the heart or origin of the blood-vessels. Heart of normal size. *Right cavities distended with black semi-coagulated blood,* whilst the left cavities were empty. The valves were perfectly healthy. (The lungs and heart were first examined *in situ,* and then removed and re-examined).

Stomach distended with gas and partially digested food (i.e. rice and green brèdes) but contained no blood. Mucous membrane healthy. Liver, spleen, pancreas, kidneys, intestines (large and small) and bladder were perfectly healthy and presented no trace of congestion or of ecchymosis. No extravasation of any kind in the peritoneal cavity. The œsophagus was laid open from the cardiac end of the stomach, and was found intact and healthy.

Such cases are not very rare after suicidal or homicidal wounds of the throat; and I have myself met with several other cases besides the present one. I have also met with similar cases from impaction of food into the larynx and bronchial tubes among the insane and drunkards, one case of this nature was recently published by my friend and assistant Mr Para, in No. 2 of the *Clinical Work,* page 62.

CASE III.—*Homicidal suffocation from compression of abdomen and thorax.—No external mark of violence or impression upon the body.—Death from complete interruption of the mechanical phenomena of respiration.*

History.—An Indian named R... came to the hut of another Indian named G... deceased girl's father (with whom he had previously been on bad terms) and informed G... that his wife had arrived from Pamplemousses very sick and wanted to see him near a Chinaman's shop on the road, distant about one mile from G...'s hut. G... at once proceeded to the spot indicated, and left R... (the murderer) in his hut alone with his two children, a boy five years old, and the deceased girl, aged three years. R... contrived and succeeded in calling the girl outside the hut, whilst the boy remained within. R...seized the girl and threw her down upon her back and placed upon her body three large stones, namely: a square flat stone (generally used by Indians for grinding curry-powder, &c.) upon her chest and abdomen, a second one on the left side of the head, and a third upon the dorsum of the feet, after which R... disappeared. Shortly after this, the boy got out of the hut and found his little sister motionless under a heap of stones; he went to see a neighbour, and informed him of what had occurred to his sister. On their return, they were met by the father who seeing his child in this position, at once removed the stones; but the child was dead.

External examination.

The body was found naked lying on the back, and was in fair condition and well made. No sign of putrefaction. *Rigor mortis* well marked. Eyelids closed and pupils dilated. No extravasation of any kind in the conjunctivæ. A good deal of white frothy mucus from the nostrils. Tongue protruded and wounded by the teeth, which were regular and perfect. Jaws firmly contracted. No punctiform redness or ecchymosis about the face or neck. Cadaveric lividity posteriorly. Chest anteriorly appeared a *little* flattened, but no external mark of violence or impression of foreign body could be detected upon abdomen or thorax. The former was highly distended and tympanitic. No sign whatever of fracture could be detected. The external genital organs were found perfectly healthy; hymen present, and no sign of violence could be detected. Legs semi-flexed. Forearms bent upon the arms. Round the wrists and ankle joints were found several iron bangles in perfect order. There was nothing in the vicinity of the body to lead one to suspect that any struggle had taken place ; but near the body lay the several stones which had been removed by the father from his child's body, which stones were duly identified by the father. There was no foreign body in any of the natural openings of the body.

The following external signs of violence were found on the face and forehead, namely: 1° On the left cheek there was a large irregular bruise, the size of a rupee, the skin was brownish, parchment-like to the touch, and was found to be infiltrated with extravasated coagulated blood; 2° Two vertical scratches or excoriations, parallel to each other, and situated on the left side of the nostrils; 3° A vertical cuticular scratch on the right side of the nostrils ; 4° Two distinct cuticular scratches on the side of the left commissure of the lips; 5° An oblique scratch, about one inch in length, along the lower jaw on the left side. All these scratches or excoriations could have been produced by the human nails; 6° A slight ecchymosis of the lobule of the left ear; 7° A bruise on the side of the forehead. These bruises may have been the result of pressure by the stone which was found placed on the left side of the head. There was no earth or foreign matter encrusted upon them to lead one to suspect that they were produced by a fall.

Autopsy performed twenty hours after death.

Scalp.—At its under surface, the scalp presented five distinct patches of extravasated coagulated blood corresponding to the left temporal and frontal bones; but no punctiform ecchymoses were detected within the cellular tissue of the cranium. The bones of the skull were perfectly healthy. The dura-mater was found normally adherent to the inner surface of the skull. Nothing abnormal about the arachnoid or pia-matter. Brain and cerebellum of normal size and consistency ; slightly injected, and a moderate quantity of clear serosity within the lateral ventricles. Base of skull healthy. Sinuses distended with dark fluid blood. The muscles of the neck were perfectly normal; jugular veins distended with with dark fluid blood. The larynx and trachea having been carefully opened, *the mucous membrane was found to be slightly red,* but not ecchymosed. No foreign body was present in the air tubes. Œsophagus healthy. Lungs and heart were found of normal size, but pushed upwards by the distended abdomen. No extravasation of any kind in the thoracic cavity.

Lungs.—Anteriorly pale but discoloured by cadaveric imbibition posteriorly. *Along their margins, between the lobes, and near the hilus there were numerous bright red, punctiform, sub-pleural ecchymoses of various sizes. Here and there the ecchymoses were of a black color. They were all found on incision to be extravasated and coagulated blood.* There was no rupture of the superficial air-cells. No cellular emphysema. Lungs crepitated under pressure, and were not gorged with dark fluid blood. The lungs floated in water. *There was slight redness of the bronchial mucous membrane.* No ecchymosis could be detected either upon or on the under surface of the pericardium, even with a lens, which contained a moderate quantity of clear serosity. The heart was of moderate size. At its base and near the roots of the bloodvessels, numerous bright red punctiform ecchymoses were seen with the naked eye. A very small quantity of dark fluid blood was found in the right cavities. Valves healthy. The ribs were uninjured. No ecchymosis was found on the inner surface of the thorax.

The walls of the abdomen were carefully dissected. No sign of putrefaction and not the slightest trace of violence or of ecchymosis could be detected. Stomach distended with undigested food and gas, but healthy. Intestines large and small were distended with gas and some fæcal matters, but *were remarkably pale. Spleen* of normal size *presented on its outer surface distinct punctiform ecchymoses.* On section the substance was found healthy. Liver of normal size; no ecchymoses; slightly congested. *Kidneys* presented no ecchymosis but were deeply congested. Uterus, bladder, and pancreas healthy. No extravasation of any kind in the peritoneal cavity. No ecchymosis within the layers of the omenta. Other organs normal.

Death in this case was caused by the complete arrest of the mechanical phenomena of respiration, and proves once more that pressure, sufficient to cause death, applied to the abdomen and thorax is not necessarily accompanied by any external mark of violence. This kind of suffocation also occurs from pressure in crowded places such as theatres, etc.

MEDICO-LEGAL REMARKS ON SUFFOCATION

I am fully aware of the great difficulty of dealing with this subject on account of the scanty medical data upon which one has to base his opinion. I have carefully weighed all the data furnished by the best authorities on medical jurisprudence and have put their statements to the test of experience. I am perfectly aware that morbid appearances somewhat similar to those found in persons who have perished from suffocation are *occasionally* met with in those who have died from other causes; but the presence of the dotted or punctiform sub-pleural ecchymoses, such as have been described by Professor A. Tardieu,* is nevertheless the most certain sign of suffocation, when, taken along with the clinical history and the general evidence of the case.

I may add, that among the several diseases and accidents in which sub-pleural ecchymoses have *occasionally* been met with, I have seen them on different occasions, and lately again through the kindness of my colleague Dr Pellereau, in certain kinds of violent death, such as falls from a height or severe crushing from machinery or railway engines, etc. The occurrence of sub-pleural ecchymoses in such circumstance were first noticed and described by Professor Tardieu, and seem to be due to the inertia of the mechanical phenomena of respiration and of the inspiratory movements, which inertia brings on a kind of struggle in the wounded person somewhat analogous to that which occurs in those who die suffocated.

In these cases, the ecchymoses are disseminated indiscriminately throughout the lungs, and have not the punctiform appearance of those which are met with in death from suffocation. The lungs too are generally pale, and may present besides patches of dark coagulated blood on the surface of the pleuræ, with or without fracture of the ribs. The intercostal spaces are wide apart from each other, and the diaphragm drawn downwards.

The presence of the multifarious lesions resulting from such an injury are to be chiefly considered notwithstanding the apparent similitude of the sub-pleural ecchymoses which exist in either case. They cannot, therefore, be looked upon as the results of death by suffocation. I have also seen sub-pleural ecchymoses after death from aneurism of arch of aorta and from epileptic fits. They were black irregular of large size and had not the dark red punctiform appearance of those met with in real suffocation and were besides irregularly disseminated.

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* Are generally of a dark red color but may also assume a bright red appearance.

2o. Suffocation may arise in various ways, as for instance when air is prevented from penetrating into the lungs by some mechanical cause acting either *externally* on the mouth and nostrils, thorax or abdomen; or *internally* obstructing the throat and air-passages; but whatever may be its cause or mode of production, the results are the same, namely: *Apnœa* or privation of air, with the characteristic morbid lesions in the lungs. Suffocation may be either accidental or homicidal, rarely suicidal, and so far as I have been able to observe it here, it is most frequently accidental.

3o. It follows from facts recorded by others, and from my personal experience, that in many cases of suffocation we do not necessarily meet with visible external traces of violence. I am, further, of opinion that we must not base our opinion upon external signs of violence only—of course when those exist, they are of paramount importance—but it is *chiefly internally*, in the respiratory and circulatory organs, that we must look for the real signs of death by suffocation.

4o. It is not always that we meet with suffocation by itself. Not unfrequently it is complicated with the signs of strangulation, in which case, besides the characteristic marks of suffocation, we may find rupture of the superficial air-cells, etc.

I do not admit that submersion or drowning should be classified under the head of suffocation, since the morbid lesions are different. Thus, it is incorrect in a medico-legal sense to speak of persons dying from suffocation who have been exposed to the deadly principles of noxious gases, such as coal-gas, carbonic oxide and carbonic acid. Strictly speaking these are cases of poisoning.

5o. Drunkards while lying semi-comatose on their backs have been accidentally suffocated in the act of vomiting, or have perished in the same way from the position in which they have fallen or been placed. In such instances, questions of vital importance have to be solved, namely: whether the condition or the position was such that deceased could not have had the presence of mind or the necessary strength for self preservation; or whether he could have been suffocated in the position in which the body was discovered. In these cases, as it has already been stated by Professor Taylor and others, a little reflection upon the circumstances of each case will often enable us to solve satisfactorily the questions involved. A case somewhat of this nature occurred to me sometime ago. A drunken soldier, after copious drinking and a good deal of fighting, fell down, and was carried (?) to some distance, where he was found dead the next morning. It was attempted to prove that the deceased had died from homicidal suffocation. Basing my opinion upon the circumstances of the case, and chiefly upon the morbid lesions found at the autopsy viz : pulmonary apoplexy, presence of alcohol in the stomach and brain, and the total absence of punctiform sub-pleural ecchymoses and of the peculiar redness or infiltration of the mucous membrane of the larynx and trachea to be hereafter described, I succeeded in satisfying the Court that the deceased died from intoxication.

6o. The late Professor Casper has described as a characteristic and sure sign of death from suffocation from any cause "a remarkable redness or infiltration of the mucous membrane of the larynx and trachea."

This peculiar redness or infiltration of the mucous membrane is no doubt *occasionally* seen in death from suffocation. It is most commonly met with as a morbid lesion in death from asphyxia from whatever cause. Moreover, this peculiar redness or infiltration of the mucous membrane of the larynx and trachea is easily simulated by, or confounded with, putrefactive imbibition; so that if putrefaction has already set in, the diagnosis of suffocation based upon *this sign becomes more than doubtful.* This is not the case with the sub-pleural ecchymoses which have been detected weeks and even months after death.* This redness of the mucous membrane seems also to depend upon the state of congestion of the lungs, the mucous membrane has been found *pale* when the lungs were not congested. There may also be found in the cavity of the larynx some frothy mucus which may assume a sanguineous appearance, or the redness may be caused by the presence of some foreign body.

7o. The state and color of the lungs depends very much upon the rapidity with which death takes place. They may be pale, and only congested posteriorly and inferiorly as a post-mortem result of gravitation, or they may be red or even black from intense congestion; but whatever may be the color and state of congestion of the lungs, the sub-pleural ecchymoses *are always present* although variable in size and number, and may further be found so long as the lungs are not entirely destroyed by putrefaction. I have not met with any apoplectic foci, nor have I met with any exudation of extravasated blood in layers upon the surface of the lungs and heart; but I do not deny their possible occurrence. I have observed that the lungs may appear increased in size from the development of cellular emphysema, which may be either general or partial. This emphysema seems to develop itself during the last moments of life, and is easily distinguished from emphysema the result of rupture of the superficial air-cells such as are met with after strangulation. I do not think that the volume of the lungs depends upon the greater or lesser obstacle which air encounters to penetrate into them, their volume seems to depend more upon the development of this cellular emphysema.

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* Il n'en est pas de même lorsque les lésions sont moins récentes, lorsqu'on pratique l'autopsie longtemps après la mort : le sang a perdu sa fluidité, les coagulations sont complètes, les taches dès lors ne disparaissent plus par la section des vaisseaux ou l'insufflation; au contraire, même si parfois l'aspect ecchymotique s'est un peu atténué sous l'influence de la putréfaction, l'insufflation du parenchyme pulmonaire les rend plus perceptibles, ou même permet de les observer alors qu'on n'en soupçonnait pas la présence. Cette dernière remarque, due à M. le Docteur Faure, est de la plus haute importance en médecine légale.

Les Annales d'Hygiène Publique et de Médecine Légale. A. Legroux. *Juillet* 1878.

8o. The state of the blood is usually found fluid, although it may sometimes be in a semi-coagulated state, when death has been slow and suffocation gradual.

9o. As we have already stated, the external marks of violence or impression of foreign bodies upon the abdominal walls may be found wanting, whilst internally, ecchymoses may be found upon the viscera or within the layers of the omentum. The kidneys are generally highly congested. I have never met with any venous congestion of the intestines in death from suffocation, whilst I have invariably met with it in death from hanging, chiefly when the bodies have remained suspended for sometime.

10o. The evidence afforded by the external appearance of the body is generally of lesser importance than that of the internal lesions. The face does not generally present anything particular. The conjunctivæ and the skin of the face and neck may present some punctiform redness; the tongue may be found protruding, but not necessarily so. There may also be found some froth issuing from the nostrils and mouth, but this is not peculiar to death by suffocation. The ejaculation of sperm-like fluid from the urethra and the passing of involuntary stools are frequently met with in almost all kinds of violent and sudden deaths, and also in almost every kind of natural death.

11o. The dark or bright red punctiform ecchymoses may be found *occasionally* wanting upon or at the under surface of the pericardium, heart, the origin of the bloodvessels, thymus gland, and also within the cellular tissue of the cranium.

My friend and colleague Dr E. Pellereau has recorded in the " Clinical Work " for July 1878 page 113 an interesting case of *Capillary Ecchymosis of Lungs in Bright's disease,* which concludes with the following statement from Professor Casper: " That no medical jurist should base his diagnosis and opinion " *merely* on the occurrence of these petechiæ like ecchymoses."

With Dr Pellereau's permission, I shall make some remarks and suggest some explanations respecting the morbid lesions found in the said case, viz:

1o. The statement of Professor Casper respecting these petechiæ like ecchymoses refers *only,* (so far as I can understand the English translation of his work*), *to their presence in cases of still-born children who have died of suffocation in utero.* If this is the case, the fœtal state of the lungs must be taken into consideration in order to determine doubtful cases. The same authority adds: " That in an actual case of suffocation, however, that is, " when a child has really breathed and been afterwards killed by " suffocation, a careful examination of the body will always afford " data sufficient to prevent its being confounded with a case of " suffocation in utero ". With these views I fully concur.

Therefore, in whatever light the statement of Professor Casper is viewed, it does not in the least, in my opinion, lessen the medico-legal value of the sub-pleural ecchymoses as a sure, if not as a pathognomonic sign, of death by suffocation.

2o. In the case above alluded to, it is not stated whether those sub-pleural ecchymoses were formed of *coagulated blood,* which is of great importance in a diagnostic point of view. The conditions in which they were formed are also worthy of our consideration, the deceased being the subject of Bright's disease, it is not surprising, as it has already been observed by Professor A. Tardieu, that ecchymoses under the pleuræ or pericardium may be met with as in hæmorrhagic diseases in general.

3o. And lastly, knowing the habits of the Indian population, have we not the right to ask whether the deceased (*who was already weakened by chronic disease*), did not use his " camlie " to cover his head and face prior to going to sleep; for this mere wrapping up of the head and face necessarily produces the occlusion of the respiratory organs, imperfectly, it is true, but quite sufficiently to cause a certain degree of suffocation and consequently these subpleural ecchymoses. I may add that I have frequently met with them at the autopsies of vagrants who have died apparently from natural causes, and almost always I have traced their presence to the wrapping up of the head and face with a "comforter," or, in some other cases, where they slept "pêle-mêle," to the [illegible] placing of a leg or arm upon the chest or abdomen, and rarely have I seen in these cases any external trace of violence or of injury.

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* New Sydenham Society. Casper's Forensic Medicine, Vol. II, Pages 126, 127, 128.

BODLEIANA BIBLIOTHECA

7th Septr.—The patient has slept a little. One voluntary motion this morning. *Increase the brandy to ten ounces.*

8th Septr.—Morning temperature 103°. The patient is sinking. Ten grains of Sulph. Quinine injected under the skin of the left arm. Ten grains are injected in the right arm in the evening. I saw the patient at 8 o'clock at night, his skin is covered with a hot clammy sweat. Floccitation.

9th Septr.—The patient is still living this morning but unconscious, with every symptom of approaching death. Ten grains of Quinine are injected under the skin of the abdomen. I again visited the patient at four o'clock this afternoon, the agony continues. The patient is still able to swallow and keeps down the beef tea and brandy but the medicines are thrown up. Incontinence of urine. Fearing that this might be due to distension of the bladder I passed a silver catheter, but only drew off a small quantity of highly coloured urine. The patient died at seven o'clock the same night.

The temperature taken in the axilla at six o'clock was 109° F.

Autopsy

10th Septr.—The Post-Mortem Examination took place at 8.30 A.M., about thirteen hours after death. No external appearances to be noted except a small abscess of the scalp corresponding to the left parietal bone.

Brain. —Weighed 2 lbs. 12 ozs. The sinuses of the dura mater were filled with dark fluid blood. Between the dura mater and arachnoid, on the convex surface of the hemisphere small deposits of newly thrown out lymph. Pia mater and brain substance, highly injected, no serous effusion in the ventricles, no hæmorrhage anywhere.

Heart. —Weight 8 oz. Healthy.

Lungs. —Right lung weighed 1 lb. 1½ oz. Left lung 1 lb. 2 oz.; both were highly congested. No adhesions.

Liver. —Weight 3 lbs. 15 ozs. The liver substance was pale and soft, of a yellowish color. Fatty degeneration.

Spleen. —Weight 11 ozs. Soft and pulpy.

Kidneys.—Right kidney weighed 6½ ozs. Left kidney weighed 6½ ozs. Both healthy.

Intestines.—The duodenum, jejunum and upper three fourths of the ileum were healthy, the lower fourth of the ileum and the colon in the vicinity of the ileo-cæcal valve presented a few degenerated Peyer's patches, in no case was the morbid process advanced beyond the first stage of ulceration. The mucous membrane of that region was of a deep red. The large intestine was enormously distended with gases. The small intestine was filled with liquid fæces of a dark reddish colour. The bladder was contracted and empty.

CONCLUSIONS

The patient died from congestion of the brain in the course of a remittent fever of a typhoid type.

TETANUS

BY Dr MONTY

Resident Surgeon, Civil Hospital

Few diseases have more perplexed the scientific inquirer and the practitioner than tetanus. Many wild and worthless theories have prevailed, and still prevail, as to its etiology and pathology—theories better calculated to mystify than assist the physician in his efforts to cure or to relieve. It is to be feared also that we have not made much progress towards a rational treatment. Nearly all the drugs in the pharmacopœia have been tried from time to time, but with scanty success. Lately chloral and the calabar bean *(physostigma)* have been used with considerable success, but they also often disappoint us; and we may say with truth that no one drug or method of treatment has met with anything like general approbation, and that the special remedy or mode of treatment extolled by one is strongly depreciated by another. It is my intention to record some fifty cases of tetanus treated in the Civil Hospital within the last ten years. Some of these I will give at full length, others briefly. From the results obtained in these cases, and in others collected from different sources, I think I shall be able to shew that chloral is, upon the whole, the internal remedy which is the most deserving of confidence in this common and dangerous disease.

Case I.—*Tetanus.—Treatment by Chloral.—Cure.*

Beersa, æt. 24, was admitted on the 1st Nov. 1871, with marked trismus, permitting the jaws to open only half an inch. The patient states that he has been ill for two days. There is also spasm of the muscles of back and chest, but not of the legs and arms. He is not aware of having received any injury, but traces of a slight wound are found on the front of left tibia. He was ordered six grains of chloral hydrate, at bed time. Diet, two pints of milk and a gill of rum.

Nov. 2nd.—Spasms three or four times an hour, and more severe. Had a short respite after the chloral last night. Bowels nfined. Ordered chloral hydrate, five grains every four hours,co and two drops of croton oil immediately.

Nov. 3rd.—Bowels freely opened. The spasms are now affecting his lower extremities; in other respects the same as yesterday.

Nov. 4th.—Had a bad night, and the disease seems increasing in severity. The chloral was now increased to ten grains, every three hours. Repeat the croton oil.

Nov. 5th.—Slight improvement. Repeat the chloral. Chicken diet and rum as before.

Nov. 6th.—Still improving.

Nov. 8th.—Yesterday and to-day the patient has continued to improve; the spasms are less frequent and severe. Continue the treatment and diet as before, and in addition give two eggs.

Nov. 9th.—Last evening the patient became again worse, the spasms of the muscles of the back and the pains were more severe. He was ordered to take the chloral every four hours, and two drops of croton oil at once.

Nov. 10th.—Felt relieved and fell asleep after each dose of chloral. Repeat the medicine every three hours.

From this time he steadily recovered, and was discharged on the 2nd December.

CASE II.—*Lacerated wound of Scalp.—Tetanus.—Cure.*

EUGENE A., æt. 36, was admitted to hospital on the 24th of June 1870. He stated that the wheel of a cart had passed over his head causing the lacerated wound six or seven inches long on the left side of the head, which we found on his admission. The scalp was torn from the bone, and the cranium stripped of its periosteum in a great part of its extent. Imbedded beneath the torn scalp was a great quantity of dirt and mud. The patient was perfectly conscious. The wound was carefully cleaned and dressed, and he was ordered a simple purgative, and was put upon milk diet and one gill of pontac.

June 25th.—Passed a bad night. Complains of some stiffness about the neck and jaws. Bromide of potassium, thirty grains, was ordered to be taken at bed time.

June 26th.—The patient had another restless night. The wound is suppurating a good deal. He complains of stiffness about the neck, back of head, and jaws; but he can open his mouth well. There is some puffiness and swelling about the face.

Repeat the bromide; apply cataplasms to wound. Beef tea one pint daily. Ordered morphia gr. ⅓ at bed time and to be repeated again if necessary.

June 28th.—Wound suppurating freely. General condition as before. Morphia, gr. ½, to be repeated if necessary.

July 1st.—Slept last night with two doses of morphia. Still complains of stiffness about the jaws, and the muscles of the left side of the neck are more tense than those on the right side. Risus pretty distinct on left side of face. Mouth can be opened to admit the index finger. Bowels confined. Apply liniment of belladonna and chloroform locally, and let the patient have twenty grains of chloral, every fourth hour. Purgative enema.

July 2nd.—Had four doses of chloral in all. Complains of headache, but says that he has no stiffness of the neck whatever.

July 4th.—About 2 o'clock A.M., yesterday, the stiffness returned, and all day he suffered from spasmodic movements of the arms. Last night he was restless. When falling asleep he started up with spasms. He can open his mouth pretty well but swallows with difficulty. Repeat the chloral.

July 5th.—Slept well. Had no spasms during the night, but has had one or two this morning.

July 6th.—The wound suppurates very freely and is rathe offensive. Complains of pain about the head. Slight *risus* on left side of face. No rigidity. In the afternoon he had rigors, continuing for half an hour followed by fever for two hours. He was ordered ten grains of quinine every morning, the wine and beef tea were continued. Repeat the chloral.

July 9th.—Abdominal muscles rather rigid. The mouth can only be opened to a limited extent. He had no spasms yesterday but twice this morning. Wound looks healthier. No fever. Continue the treatment.

July 10th.—Had fever yesterday from 1 o'clock P.M. to 1 A.M. this morning. Passed a bad night. Tongue rather furred. Took little or no food yesterday. Complains of pain about left side of neck and shoulder, but there is no rigidity. Treatment: Mistura quiniæ, chloral, and liniment. Diet and wine as before.

July 12th.—Had another attack of fever this morning from 1 to 3 A.M. Yesterday and to-day has had marked opisthotonos. Retraction of head. Continue the treatment.

July 14th.—Condition unchanged.

July 16th.—Yesterday the chloral was omitted, he had bromide of potassium in thirty grain doses; without any good effect.

Jaws closed. Opisthotonos more marked. Urine scanty. Chloral grs. 30, every four hours.

July 17th.—Feels better; rigidity much less. Ordered a purgative enema.

July 18th.—Had two doses only of the chloral as he slept mostly all day. Seems improving. Spasms and rigidity less severe.

July 20th.—Had three doses of chloral yesterday 30 grains each). Slept well, and feels better.

July 21st.—Not quite so well this morning. More stiffness about the muscles of neck and abdomen. Cannot open his mouth so well. Continue the treatment.

July 23rd.—Better. The head is still retracted and the muscles of the neck rigid. Yesterday morning he was able to get out of bed. Repeat the medicines.

From this date the improvement continued steadily, but very slowly; the tetanus entirely passed off by about the middle of August, the wound healed up, and he was discharged on the 1st of September.

CASE III.—*Wound of Knee.—Tetanus.—Recovery.*

AYIAH KHAN, æt. 15, a native of Calcutta, was admitted on the 15th April 1875, with a deep lacerated wound of right knee joint and bruising of surrounding tissues. On the morning of the 20th the patient complained of stiffness and pains about the nape of the neck and jaws, and a general sense of lassitude. His tongue was furred, skin somewhat hotter than natural, pulse 120, and soft; bowels confined; appetite indifferent. He state that while he was getting the wound dressed he felt a sudden chill running through his whole body, and that the above mentioned symptoms followed this chill.

April 21st.—The patient has passed a bad night. Bowels opened with an enema. Stiffness of jaw more marked, with difficulty of deglutition. Complains of pains and spasmodic contractions of muscles of back. Abdominal muscles tense; pulse 124 and soft; skin hot and bathed in perspiration. Complete loss of appetite. Wound has rather a foul appearance. He was ordered chloral hydrate, in ten grain doses, every two hours, and poultices were applied to the wound.

April 22nd.—Patient worse. Jaws fixed. Rigidity of muscles of neck and back. Increase the chloral to 12 grains.

April 24th.—Well marked opisthotonos and *risus sardonicus.* Difficulty of swallowing and of respiration. Has had severe spasms during the last night. Skin hot and dropping with perspiration. Complains of burning sensation all along the alimentary canal. Pulse 130. Increased the chloral to 15 grains every two hours, and the wound was dressed with carbolic liniment, and a drop of croton oil was ordered, to be given in the evening.

April 26th.—Patient's condition by no means improved. Spasms in muscles of back very severe, and recurring every 15 or 20 minutes. Cannot take solid food. Increase the chloral to 20 grains, every two hours. Wine, beef tea, soup.

April 27th.—Patient much better this morning. Has passed a better night, and complains less of pain. Can open his mouth better; opisthotonos has disappeared, and the rigidity about neck and abdomen is less. The spasms are less frequent. Continue the chloral in doses of 20 grains.

April 28th.—Patient can open his mouth well and swallows with less difficulty. The abdomen is soft. There is no rigidity of the legs, but the muscles of the back are still a little stiff. The spasms are less frequent, but still very severe. The patient sleep a great deal. His bowels are loose. Continued the chloral as before, and ordered an astringent mixture.

April 30.—The patient is able to sit up in bed; opens his mouth well.

After this, the chloral was continued for a time in gradually decreasing doses. He was discharged cured on the 24th of July.

Case IV.—*Wound of Hand.—Tetanus.—Death.*

Boodhooa, æt. 31, a native of India, was admitted into the Civil Hospital on the 19th of April 1878, suffering from traumatic tetanus. He stated that while engaged in cutting grass, ten days before, he accidentally wounded the palm of the left hand. Five days afterwards he got wet, had an attack of fever, and from that time the symptoms of tetanus commenced, with pain and stiffness in the muscles of the neck and difficulty in opening his mouth. Next day these symptoms increased, and he then began to have spasms in the extremities; the muscles of the back became rigid, his appetite failed, and his bowels were confined.

On admission the patient who was a well nourished, man of middle size, was found to have a small wound on the inner aspect of the palm of the left hand. The following symptoms were noted. The mouth could only be opened to the extent of three fourths of an inch. The muscles of neck, back, abdomen, arms and legs were rigid, and there were frequent painful spasms. Deglution and repiration difficult. Voice husky. Constant spitting. Temperature at 8.30 P.M. 38.7. Pulse 100 and soft. Treatment: Cathartic enema at once; and chloral, grs. 15, every three hours.

April 20th.—Has passed a restless, sleepless night, owing to the severity of the spasms. The rigidity of the muscles is as great as ever. He also compains of shooting pains in the epigastrium. Loss of appetite complete. Bowels well opened last night. The spitting of frothy mucus persists, as also the difficulty of breathing. The skin is bathed in perspiration. Temperature in the morning 39.3; evening 39.4. Repeat the chloral every two hours.

April 21st.—No improvement—in fact, the spasms are more severe. Opisthotonos well marked. Continue the chloral, and apply the chloroform and belladonna liniment.

April 22nd.—Slept a little better last night, swallows with less difficulty, and can open his mouth wider. No opisthotonos, but there are frequent spasms and he sweats profusely. Morning temperature 39.4. After consultation with the medical officers of the hospital, it was decided to divide the ulnar and median nerves. This was accordingly done and a small portion of each nerve was excised. Evening temperature 39.9. Continue the chloral and apply poultices to seat of injury.

April 23rd.—Hardly sleept any last night. Has suffered a great deal from his left arm especially at the spot where the operation was performed. The arm is swollen and red. *Risus* less marked but the rigidity of the muscles of the abdomen and neck still very decided. Less difficulty in breathing, and spasms less severe.

The chloral was now suspended in ordered to see the effect of the operation. Evening temperature 40.3.

April 25.—The patient is morose. Tetanic condition much the same as before. Left arm swollen, hot and red. Morning temperature 39; evening 39.4. The chloral was ordered again and poultices applied to arm.

From this time the patient's condition got worse. The spasm became more and more severe, and he died on the 28th, retaining consciousness upon to the last. Temperature at the time of his death was 40.8. After three quarters of an hour, it reached its maximum viz., 42.6, and then began gradually to fall.

CASE V.—*Wound.—Tetanus.—Death.*

BUSGEET, æt. 35, a native of Calcutta, was admitted into hospital, at 4.30 P.M. on the 13th July 1869. He is a strong, well-built man. About three weeks ago a piece of wood fell upon his left leg. There are at present two lacerated wounds over the anterior surface of left tibia which are painful when touched. He states that four days ago he began to feel a stiffness of the neck and next day could not open his mouth freely. The symptoms have increased in severity. His face and neck are bedewed with perspiration. His jaws are firmly closed so that he can hardly protude his tongue. Breathing chiefly abdominal. Thorax almost unmoveable. Abdominal muscles tense. Spasms frequent. Bowels constipated. Says that he has not passed water since morning. Pulse 128 and soft. He was ordered a purgative enema; a linseed poultice with tincture of opium was applied to the wound, and a $\frac{1}{6}$ of a grain of calabar bean was given every hour.

When seen at 9 P.M., he appeared less distressed, *risus sardonicus* and rigidity of the muscles less marked. The spasms are not so frequent. Has perspired very profusely. Pulse soft, 104. Ordered an enema of croton oil and turpentine. Continue the calabar bean.

July 14th.—Had no sleep last night. Perspired very freely all night. Has had eight doses of the bean. About 3 A.M. he was violently convulsed and has taken nothing since then. At 7.30 has just died. All the muscles are relaxed; mouth open; lower extremities limp.

Half an hour after death it was observed that post-mortem rigidity had commenced in the upper part of body while the lower extremities were still flaccid.

CASE VI.—*Idiopathic Tetanus.—Remittent Fever.—Recovery.*

MARDAYE, age 13, a native of Madras, was admitted on the 5th December 1870. The patient, a well nourished boy, was seen by me at his own house on the morning of the 5th, when he appeared to be stiff and unable to walk. He was said to have been in that condition for several days.

On admission we noted as follows :—Abdominal and sterno-mastoid muscles rigid. *Risus* well marked. Is able to open his mouth pretty well. No spasms. Bowels opened by purgatives. From the accounts given it would seem that he had slept on a cold damp floor and had afterwards complained of pains and stiffness especially about the joints. He was ordered a purgative enema, a liniment of belladonna and chloroform, and 5 grains of chloral twice a day, along with milk, diet and wine.

Dec. 6th.—Had a good sleep after the first dose of chloral. Stiffness about abdomen and neck continues. Can separate his jaws pretty well. No spasms. Repeat enema, liniment, and chloral.

Dec. 7th.—Had strong spasms yesterday about 11 A.M. at intervals for half an hour. Rigidity about abdominal muscles still very great. Sterno-mastoid muscles more relaxed. *Risus* still marked. Same stiffness about lower extremities especially of the right side. Repeat treatment.

Dec. 8th.—Had a severe spasm yesterday at about 2 o'clock P.M. which lasted five minutes and was caused by his taking food. Complained a good deal of his abdomen. After this he fell asleep till 7 o'clock, when he had another but less violent fit. Passed a good night and is quiet this morning. Bowels acted scantily after a turpentine enema given yesterday. Can open his mouth well. Abdominal muscles not so rigid. *Risus* still marked. Repeat the chloral and give a purgative of calomel and scammony at once.

Dec. 9th.—Yesterday at about 1 P.M., he was seized with a severe spasm which lasted for about 5 minutes. Otherwise is getting on well. Was ordered to take the chloral three times a day and 10 grains of quinine was administered in enema.

Dec. 12th.—Yesterday, and the day before, had spasms about 6 P.M. which lasted for about 5 minutes. Otherwise is getting on well. Continue the medicines.

Dec. 14.—Going on well. No spasms, but the abdominal muscles are still rigid. Risus persists, but he can open his mouth well. Slight heat of skin. Bowels have acted regularly. Cannot sit up through rigidity of the trunk and extremities. Repeat chloral, but give it only twice a day, also 5 grains of quinine in enema.

Dec. 15th.—Has been feverish, and was ordered 10 grains of quinine by the mouth and the chloral was continued.

17th.—Had remittent fever yesterday—the rigors beginning about 8 A.M. were followed at 9 A.M. by profuse perspiration.

During the day the fever abated. Skin rather warm this morning. Abdomen still hard.. A good deal of rigidity about the body. Cannot sit up or stand from the rigid state of the muscles. Takes food well. Repeat purgative powder and quinine mixture.

Dec. 19th.—Potass. bromidi grs. 10, twice a day; tinct. quiniœ. grs. 10 daily.

Dec. 22nd.—Convalescent.

Dec. 26th.—Discharged.

Case VII.—*Idiopathic Tetanus.—Recovery.*

Ah-Yon, a Chinaman, aged 30, was admitted on the 26th October 1876. He stated that about four days before he got wet, and that the next day he began to feel a stiffness in the muscles of the neck and jaws accompanied with pains all over the body. On being asked, he denied having received any accident or injury. The stiffness went on extending from the neck and jaws to every part of his body. On admission every muscle of the body was intensely rigid. Trismus well marked with *risus sardonicus.* Expectorates frothy mucus. Great difficulty of deglutition and respiration. Bowels confined. Opistothonos well marked. Severe clonic spasms occurring every 10 or 15 minutes. Complete loss of appetite. Intense heat of skin which is bathed in perspiration. Was ordered 15 grains of chloral every three hours.

Oct. 27th.—Patient seems rather worse. Was ordered an enema which moved the bowels well,.and 15 grains of chloral every two hours instead of every three hours.

Oct. 28th.—Patient is much worse. Complains of pain all over. Intense rigidity of all the muscles of the body. Opistothonos more marked than before. Great difficulty of deglutition. Tetanic spasms recurring every 5 or 6 minutes. Breathing hurried. Pulse quick and soft. Skin hot and bathed in perspiration was ordered 20 grains of chloral every two hours.

Oct. 30th.—Slight improvement in the condition of the patient. Was ordered two drops of croton oil. Continue chloral.

Nov. 1st.—In spite of the croton oil, the bowels have not been moved, but there is a slight improvement in the condition of the patient. He can open his mouth a little. Was ordered a dose of jalap powder at once, and the chloral was continued.

Nov. 3rd.—There is marked improvement in the state of the patient. He can open his mouth better, as well as flex his legs, but the abdomen is still very tense. He experiences still a great difficulty in swallowing. Spasm less severe. No opisthotonos. Bowels acted twice yesterday.

Nov. 6th.—Much about the same as yesterday but the tetanic spasms have altogether disappeared. The abdomen still rigid, so are also the muscles of the neck, but the jaws can be opened a little more easily. Towards night he had several tetanic spasms which tend to recur whenever the patient swallows anything. Bowels acted well yesterday. Was ordered 25 grains of chloral, every two hours.

Nov. 8th.—Patient is much better. Can open his mouth well. Can swallow with more ease. Can flex his legs with less difficulty. Breaths well. Less rigidity in the muscles of the neck as well as in those of the abdomen. Continue chloral.

Nov. 11th.—Patient is greatly improved. Can get out of bed and walk. Continue chloral which was never omitted until the 14th.

Nov. 16th.—Since yesterday there has been a tendency to the recurrence of the trismus. Was immediately ordered 25 grains of chloral every two hours. From that date up to the 14th December, the day he left hospital, the patient was free from all symptoms of tetanus.

Case VIII.—Sababayee, aged 36, a native of Madras, was admitted to hospital on the 15th of August 1878, at 10 A.M. with a wound of left foot involving all the phalanges and the ends of the metatarsal bones caused by the wheel of a locomotor passing over it. The wound was lacerated and full of dirt. The accident had occurred eighteen hours before his admission. The wound was cleaned and dressed, as much of the crushed portions being removed as appeared necessary. He was ordered 25 grains of chloral at bed time, and a poultice applied to the wound.

Augt.—Doing well.

Aug. 17th.—Some of the soft parts that seemed to be gangrenous were removed along with a part of the first metatarsal bone. Continue cataplasms and carbolic oil, and give chloral gr. 20 at bed time. From this time up to 22nd the parts looked healthy and the patient seemed to be getting on well. On the 23rd, however, at the morning visit, the patient complained of stiffness about the jaw and difficulty in swallowing and in breathing. Is unable to speak distinctly from a difficulty in moving his tongue; opisthotonos and risus. Pulse 120. Temperature at 6.30 A.M. 37.8; noon 38.5 and at 6 P.M. 38.5. He is bathed in perspiration. The wound still looks healthy. Cataplasms with opium were applied locally; morphia hydrochlorate gr. ¼ every 2 hours, and a blister an inch wide placed along each side of the spine from the nape to the sacrum. At 8 P.M. it was noted that the pupils were contracted but that the tetanic symptoms had undergone no change.

Aug. 24th.—At 6.30 A.M., is unable to swallow and we see no change for the better. Temperature 37; pupils contracted to a pin's head; pulse 120. Continue opiate cataplasms locally. Omit the morphia, and apply another blister to back. The bowels were moved at mid-day with an injection. At noon, the temperature was 39.8 and at night 39.6. He then seemed, to be sinking rapidly and he died shortly after midnight.

Temperature two hours after death 41.8.

(To be continued).

DYSENTERY

BY D^r^ BOLTON

Government Medical Officer, Savanne

Dysentery is so common in tropical climates that it behoves us to find out what is, upon the whole, the best mode of combating it. The only way to arrive at a just conclusion is to collect statistics of cases admitted into the different hospitals and compare the results of the different modes of treatment. Each practitioner has his favourite remedies, or *methodus medendi,* but ipecacuanha is in general repute—the mode of administration differing according to the ideas of the physician.

The mode of using the drug which I prefer and which to my mind offers the best chames of success is the " Brazilian " method; and the way to proceed is this; One dram (4 grammes) of coarsely powdered ipecacuanha root is allowed to stand over night in half a tea cupful of cold water, (about 2 ounces). Half of this is given cold next morning, and the remainder ten minutes after. This will cause the patient to vomit twice or three times. The roots are kept for next morning, when the same quantity of boiling water is poured upon them; when cold, this infusion is given in the same way as on the previous morning. The roots are kept again for the third morning, when they are boiled in double the quantity of water, and when the decoction has evaporated to half its original quantity it is allowed to cool and is then given as on the first two occasions. So that one dram of ipecacuanha root goes through the processes of cold maceration, and hot infusion, and decoction.

It very seldom happens that the blood, slime and straining do not disappear after the third dose, and only sometimes a little diarrhœa remains, which yields to castor oil and mild astringents.

Ipecacuanha has a marked action upon the mucous membranes of the body in general. Its effect upon the mucous membrane of the eyes and nose, larynx and trachea is too well known to require further notice. Its action on the mucous membrane of the intestinal canal is similar to that on the laryngeal and bronchial membranes. It produces increase of secretion and consequently relieves congestion or inflammation as the case may be.

On the mucous membrane of the respiratory passages it acts as an expectorant, on that of the intestinal tube as a purgative, very mild in its effect, producing none of the disagreeable symptoms of other vegetable purgatives. It is especially in the acute form of dysentery that this method of giving ipecacuanha answers, that is, when there is inflammation, but no ulceration or very trifling if any. This is the reason why the treatment is so successful on Sugar Estate Hospitals; for the Indian, ever prove to report himself sick, seeks for medical treatment at the outset of the disease, before any serious lesion of the bowel has set in. The efficacy of the drug is all the more patent when we consider the difficulty one meets in attempting to make these patients follow a suitable dietary.

On the other hand, in a public hospital we receive patients, who, not being *forced* to go to hospital, only do so when overcome by suffering and poverty they are compelled to seek a refuge there as a last resource. Here, of course, we have to deal with a very bad class of cases—patients debilitated by the disease, in some instances reduced to mere skeletons. These patients require a stimulating diet to prevent their dying from sheer exhaustion, and alcohol is not to be recommended in dysentery. The consequence is that the mortality from this disease is greater in our public institutions that on Estates.

The diet *par excellence* for dysentery is milk and bread—thirty ounces of the former (say one litre) and sixteen ounces of bread in the 24 hours. Of course extras in the shape of eggs, beef tea, etc., and alcohol are given according to the requirements of the case. The use of these is clearly indicated where there is great debility. The result of this treatment in the Poor Law Hospital of Souillac, will be at once seen from the following tables:—

From 1867 to the 31st of August 1878, 117 cases of dysentery were admitted into the hospitals; of these 96 were cured. Those cases which proved fatal were all chronic, attended with ulceration, and many of them admitted in a state precluding all hopes of a cure. Their stay in hospital extended in one case to seven days and in another to eighty seven days; and between these two extemes for very varying periods.

I am not in possession of statistics of cases of dysentery teeated according to any other method. So that it is not possible for me to institute a comparison, between this and other modes of treatment, but it would be highly interesting and important to find out the most effectual treatment of the disease.

The dysentery of children does not yield readily to ipecacuanha, and when it does it soon returns. The reason of this is evident. In ninety *per cent* of the cases of infantile dysentery, the exciting cause will be found to be worms, the treatment here therefore is clear. Remove the cause. In fact, almost any disease of childhood may be prudently attacked by a preliminary anthelmintic before proceeding to the regular treatment of the ailment. By far the most useful and used medicines for children are calomel, grey powder, and santonine.

Before concluding these short notes I must say a few words about the different *tisanes* given by empirics, some of which have a most decided virtue. I know many cases which, after resisting calomel, opium, ipecacuanha, simaruba and all the other drugs usually recommended or suggested by experience, have rapidly yielded to the remède Mauvis, Rozan, Poisson and others. In all these tisanes the principal ingredient is simaruba, but from the results obtained it is evident that there are other and powerful drugs mixed up with it. Although an avowed enemy of empirics, still, I cannot help confessing that they very often succeed where we have failed.

Postscript by the Editor.—I think the author perfectly right in expressing so frankly his opinion as to the supposed merits of these empirical or quack remedies; and I know that many medical men in the Colony share his views. After careful consideration of the subject I have only to say that I am entirely unconvinced of their superiority to the remedies generally adopted by the profession; and I venture to add that Dr Bolton's success furnishes the best argument against the pretensions of those vile harpies, who prey upon the credulity of an ignorant public here even more than in England or America, and that is saying as good deal.

DES INJECTIONS SOUS-CUTANÉES DE BROMHYDRATE NEUTRE DE QUININE DANS QUELQUES FORMES DE FIÈVRES TELLURIQUES

PAR LE Dr DARDENNE (DE L'ILE MAURICE)

REVIEW BY Dr PELLEREAU

Medical Officer of the Police and Prisons

Malaria, in all its forms, being very frequently attended with gastro-intestinal complications which in some cases are so intense as to prevent or impede the administration and efficacy of quinine, practitioners in Mauritius, have been compelled now and then to have recourse to the method of hypodermic injections in order to obtain speedy results. Sulphate of quinine was at first resorted to, but of late the bromide of the alkaloid seems now for many reasons to be mere generally preferred. We published in the first number of this quarterly a case of melanuric fever successfully treated according to this method. Our countryman, Dr Dardenne wrote sometime ago an able paper entitled " Des injections sous-cutanées de Bromhydrate neutre de quinine dans quelques formes de Fièvres Telluriques," in Dr Gubler's *Journal de Thérapeutique* from which we extract the following interesting summary of his views upon sub-cutaneous injections :—

CONCLUSIONS

Il ressort de cette étude les faits suivants :

1o Le bromhydrate neutre de quinine de l'officine de M. Boille, employé en *injections sous-cutanées,* constitue l'arme **la** plus puissante à opposer aux accès pernicieux.

2o Les injections sous-cutanées trouvent également leur indication dans tous les cas où un mauvais état des voies digestives s'oppose à l'absorption du fébrifuge, et dans certaines formes invétérées d'impaludisme où l'organisme a déjà reçu une profonde atteinte. La méthode hypodermique, en d'autres termes, s'impose là où une intervention médicale active est nécessaire.

3o Elle a donné de bons résultats dans un cas de fièvre *à retour périodique mensuel* qui durait depuis 9 ans, et contre lequel le sulfate de quinine administré par la bouche, et sous toutes les formes, avait échoué (Obs. VIII).

4 Elle a complétement réussi dans un cas de fièvre *à type quarte* datant depuis bien longtemps (Obs. IX).

5° Dans tous les cas, sans exception, la solution alcoolisée s'est toujours montrée d'une *innocuité absolue* pour le tissu cellulaire sous-cutané, même lorsque les piqûres ont été faites en *plein œdème chez des cachectiques* (Obs. V et VI).

6° L'infiltration du tissu cellulaire sous-cutané n'est pas un obstacle à l'absorption et par suite à l'action curative du fébrifuge.

7° Aucune trace de phlegmasie locale consécutive n'a été observée à la suite des piqûres faites chez un vieillard où l'organisme était profondément altéré par une longue suppuration (Obs. X).

8° Le nouveau sel employé par la méthode sous-cutanée nous a semblé guérir pour un laps de temps plus long que lorsqu'il est administré par les voies digestives.

9° Le choix du lieu d'élection n'est pas sans importance : les membres supérieurs du côté de l'extension, la région du bras à sa *limite postérieure deltoïdienne* paraissent favoriser plus complétement et plus rapidement la diffusion du liquide ; les téguments de l'abdomen chez les ouvriers et les laboureurs sont dans le même cas. Choisir les régions où la peau est assez extensible, où le tissu cellulaire ne présente pas une trop grande résistance, etc.

10° Ne jamais se servir d'une *solution ancienne* qui a perdu sa limpidité soit par le fait de l'évaporation de l'alcool, soit par le fait de matières étrangères qu'elle peut contenir.

11° N'injecter la solution que lorsqu'elle est *irréprochablement limpide et ne pas dépasser, dans nos climats chauds, la dose d'un centimètre cube à chaque injection.*

12° Apporter les soins les plus scrupuleux dans l'entretien de l'instrument.

13° Se méfier de certaines marques de bromhydrate de quinine.

14° En présence de tous les faits que nous avons rassemblés en faveur de ce médicament extrêmement précieux et de tous ceux accumulés avant nous par nos savants prédécesseurs (professeur Gubler, Dr Soulez, les Drs. Rendu et Raymond, internes lauréats (médaille d'or) des hôpitaux de Paris, etc.), il reste acquis à la science que le nouveau fébrifuge, en raison de sa *plus grande richesse en alcaloïde, de sa plus grande solubilité et surtout de son innocuité complète pour le tissu conjonctif sous-cutané,* s'adapte avec plus d'avantage à la méthode hypodermique que le sulfate de quinine, et possède par ce fait une supériorité réelle et indéniable sur ce dernier.

take place in the elementary constitution of the blood consequent upon a torpid state of nutrition produced by frequent disorders of the gastro-poietic viscera. These changes, which are considered by Dr Mazaé Azéma as absolutely necessary, as a *sine quâ non* of the existence of Europeans in our regions are characterised by a remarkable diminution in the red globules and a proportional increase in the quantity of serum, both of which are changes, as we know, symptomatic of anæmia or to use a quite modern expression of aglobulia. The serum of the blood so modified, having a persistent tendency to increase, being formed in excess and extravasated into the adjacent areolar tissue, the lymphatic system must bring back into the general circulation this serum which has not been consumed by the tissues for their nutrition. Hence an exaggerated functional activity is bestowed upon this important system in order to maintain the equilibrium which, if destroyed, would give rise to the pathological lesions little known up to the present time, such as elephantiasis arabum, chylous urine etc. Hence also from this exaggerated functional activity, which is purely physiological, a relative increase of leucocytes in the blood. Such are the views of the author on the pathogeny of diseases of the lymphatic system in hot climates, views which, in our opinion, seem to be, in a certain degree, corroborated and supported by microscopical examination. There is, we believe, a difference between human blood in cold and temperate climates and that in tropical regions as shown by the microscope. The latter contains an excess of serum, its red globules are diminished, have less tendency to form *rouleaux*, and there is positively a relative increase of leucocytes which sometimes is so great as to be compared with leucocythemia. We purpose, in a future number of this quarterly, to advert to this interesting question and consider fully and minutely the microscopical condition of normal human blood in tropical regions.

(To be continued).

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